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New and little known Fulgoroidea from South Africa (Homoptera)

by

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SYNOPSIS

Descriptions and figures are given of the following eight new genera and twenty-five new species: Cixiidae—*Caffrocixius* n.gen., type *personatus* n.sp.; Achilidae—*Brachypyrrhyllis* n.gen., type *fuscoclypeata* n.sp.; Dictyopharidae—*Risius limonias, gibbus, belona, porrectus, patroclus, palamedes, astyanax, omega* n.spp., *Strongylodemas retarius* n.sp., *Capenopsis socrates* n.sp., *Codon adrastus* n.sp., *Menenches atropos* n.sp.; Tropiduchidae—*Caffrommatissus* n.gen., type *trimaculatus* n.sp.; Issidae—*Caliscelis nero* n.sp., *Asarcopus phaedo* n.sp., *Griphissus* n.gen., type *xenocles* n.sp., *Gamergus phintias, croesus* n.spp.; Nogodinidae—*Telmosias* n.gen., type *crito* n.sp., *plato* n.sp., *Telmessodes* n.gen., type *proconsul* n.sp., *Stilpnochlaena* n.gen., type *xeno* n.sp., *Afronias* n.gen., type *tetrablemma* n.sp. A new tribe, *Mithymnini*, is erected for *Xosias* Kirkaldy, *Mithymna* Stål, *Colmadona* Kirkaldy and *Monteira* Melichar, which are transferred from Issidae to Nogodinidae. *Gengis* Fennah, 1949, Gengidae, is made a synonym of *Acrometopum* Stål, 1853, formerly assigned to Issidae. The genera *Camerunilla* Haglund, *Eucameruna* Melichar, *Durium* Stål, *Heinsenia* Melichar, *Obedas* Jacobi, *Gergithomorphus* Haglund and *Spathocranus* Muir, are transferred from Issidae to Tropiduchidae, and *Mahanorona* Distant is transferred from Issidae to Dictyopharidae. *Hysteropterum curviceps* Synave is transferred to *Telmosias* n.gen. Supplementary descriptions are given of *Afrachilus mirabilis* Fennah (Achilidae), *Risius spurcus* Stål and *Strongylodemas circulare* Stål (Dictyopharidae), and *Microeurybrachys vitrifrons* Muir (Gengidae). New records are given for species of Delphacidae, Achilidae, Dictyopharidae, Tropiduchidae and Issidae.

Many of the species in the various families show strongly convergent features involving the nature of the integument and tegmina, body shape, brachypterism or apterism, and coloration. A high proportion of such species is associated with the distinctive macchia vegetation of the Cape fold mountains and the Eastern Highlands of South Africa; a few species have become adapted along with elements of the macchia to arid karoo conditions. The convergent features apparently can be attributed to the environmental conditions in which the macchia has evolved and which it offers to its inhabitants.

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INTRODUCTION

This study is concerned with new species of Fulgoroidea in the families Cixiidae, Achilidae, Dictyopharidae, Tropiduchidae, Issidae and Nogodinidae. The opportunity is taken of commenting on known species in some of these families and also in the family Gengidae.

The material on which the descriptions have been based was in part collected by B. R. and P. J. Stuckenberg, and in part was found in the accessions of the British Museum (Natural History). Items from the former source are in the Natal Museum, and from the latter in the British Museum (Nat. Hist.), referred to below by the initials B.M. (N.H.).

The extraordinary degree of convergent evolution exhibited by Fulgoroid genera in South Africa bids fair to make them a classical example of this phenomenon. There has been a strong tendency to develop a squat, shortly ovate or subglobose bodily form, a coriaceous derm, often in a mottled dull yellowish-brown hue, thick brachypterous or coeleopterous tegmina, and for the wings to become reduced or to disappear. The nature of the specialisations of form that have occurred suggest that they have developed under the selective influence of severe, or prolonged, environmental stress, and are chiefly of importance in the conservation of the moisture within the insect. The body forms that have emerged are of a type commonly found in members of the family Issidae, but rare in other families. This fact has led to a number of family assignments of genera that need correction; some of them are considered below under their appropriate families.

The ecology of these specialised forms of Fulgoroidea is clearly of exceptional interest, and as a contribution towards its understanding, notes are given by Mr. B. R. Stuckenberg on the localities in which part of the material was collected: these are presented in an Appendix.

The writer's warmest thanks are tendered to Mr. Stuckenberg and to Mr. J. P. Doncaster, Keeper of the Department of Entomology at the British Museum (Natural History) for the privilege of examining these most interesting specimens.

DESCRIPTIONS OF GENERA AND SPECIES

Family *CIXIIDAE* Spinola

Caffrocixius gen.n.

Vertex rather narrow, about as long as broad, almost as wide at apex as at base, extending only slightly before eyes, about as long as broad at base, basal margin deeply concave, apical margin angulately convex, a distinct transverse carina present at middle. Frons longer than broad, median ocellus distinct, median carina simple, lateral margins foliaceous, clypeus medially carinate, lateral margins foliaceous. Rostrum much surpassing post-trochanters; antennae with second segment cylindrical, about twice as long as broad; lateral ocelli distinct. Pronotum short, lateral carinae of disc prominent, median carina present, a short carina laterally between eye and tegula; mesonotum tricarinate and with a pair of feeble intermediate carinae. Legs long and slender, post-tibiae laterally unarmed, apically with six teeth, basal metatarsal segment with eight teeth, second segment also with eight. Tegmina rather shallowly tectiform, apical margins not meeting in repose; Sc + R and M arising separately from basal cell, R with four branches at apex, M with five, M1 – 2 forking nearer to Mf than M3 + 4. Abdomen without lateral processes basally. Ovipositor sub-ensiform, pregenital sternite longer than broad.

Type species, *Caffrocixius personatus* sp.n.

In addition to the carriage of the tegmina, the unusually long pregenital sternite of the female sets this genus apart from such genera as *Brixia*, *Brixidia* and *Achaemenes*, even if the incipiently quinquecarinate condition of the mesonotal disc is not regarded as of generic significance, and the form of the ovipositor, as well as of the head, separate it from *Cixius* and *Oliarus*. In Muir's key (*Pan Pacific Ent.* 1: 104, 1925), if the mesonotum is regarded as quinquecarinate, the type species runs to *Nesopompe*, but differs entirely from this in the number of teeth on the apical margins of the first and second segments of the post-tarsus and in the shape of the head; if the mesonotum is regarded as tricarinate, it runs to *Calamister*, but differs in having a well-developed median ocellus and a vertex that is not transverse. The general form is suggestive of *Solonaima*, but the form of antennae and build of the head are very different.

Caffrocixius personatus sp.n. Text-fig. 1, A-J

Vertex not wider than eye in same line, extending only a little before eyes, about as long as broad at base, basal margin deeply concave, lateral margins weakly concave, anterior margin angulately convex, with median carina of frons prominent; frons longer than broad (about 1.5 : 1), lateral margins convex, strongly foliaceous, but becoming broad and callused basally, median carina extending from base to median ocellus; ocellus situated a little basad of frontoclypeal suture; clypeus longer than broad at base, lateral margins foliaceous, median carina prominent; rostrum long, basal segment attaining post-trochanters, apical segment a little shorter than subapical, reaching to level of fifth abdominal segment, antennae with basal segment short, ring-like, second segment longer than first, about twice as long as broad, third segment ovoid with short apical seta longer than segment itself, and as thick as long apical seta; lateral ocelli large. Pronotum narrow, anterior margin of disc transverse, posterior margin deeply angulately excavate, lateral carinae of disc foliaceous, median carina prominent; a carina on each side laterally between eye and tegula; mesonotum as long as broad, longer than head and pronotum combined, medially and laterally carinate, and with evident traces of a pair of intermediate carinae. Legs slender, post-tibiae laterally unarmed, apically with six spines, basal metatarsal segment with eight teeth, second segment also with eight.

Tawny; frons, except apically and in two spots near middle, clypeus across middle and at apex, genae and sides of head, except for a spot before ocelli and another above eyes, black. Frons distally, clypeus basally and genae below antennae, sordid white. A suffusion on lateral lobes of pronotum, tegulae except basally, and mesonotum, dark reddish brown; legs uniformly fuscous. Tegmina milky-hyaline; Sc + R and first claval vein reddish brown, veins otherwise almost black, an oblique band from first fork of M to stigma, and a suffusion between Cu1b and posterior margin at apex of clavus, brownish black; node orange-yellow. Wings hyaline, infumed between anterior margin and M along R-M cross vein.

Anal segment of male rather long, rectangularly deflexed ventrad at level of anal foramen, apical margin short, transverse or weakly concave, lateroapical angles each produced in an aciculate process. Pygofer rather long, lateral margins broadly produced caudad in a convex-truncate lobe, medioventral process in ventral view triangular, in profile with both dorsal and ventral margins convex. Aedeagus tubular, a vertical triangular

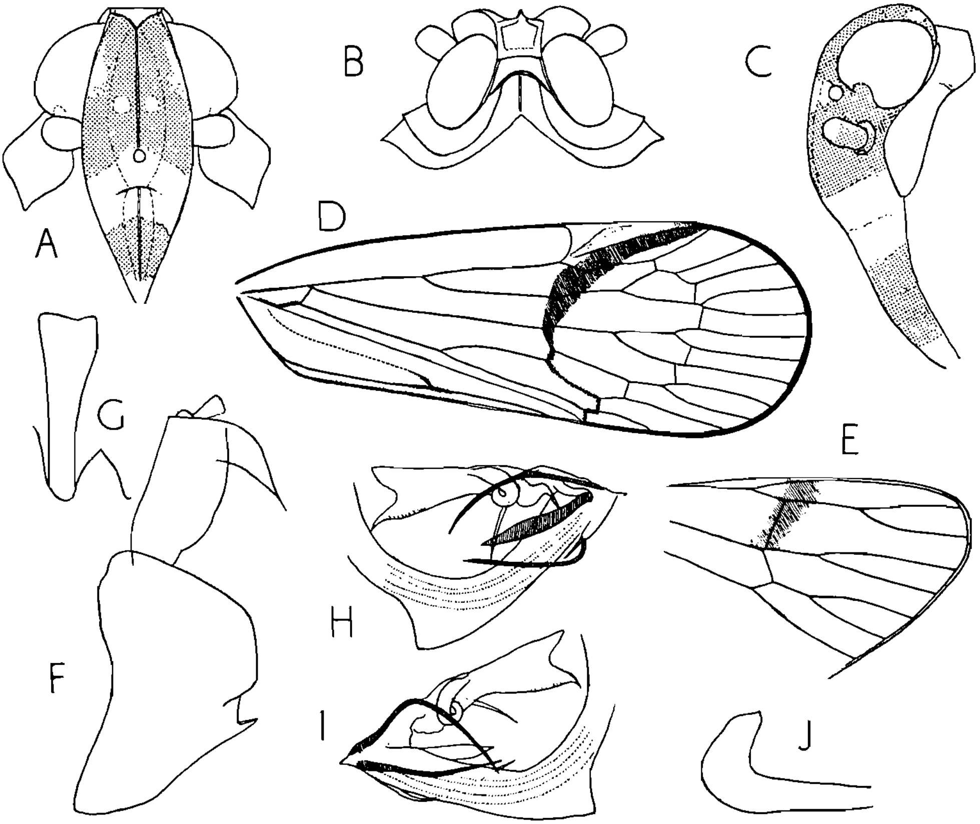

Fig. 1. *Caffrocixius personatus* gen. et sp. n. A, Frons, clypeus and lateral lobes of pronotum; B, vertex and pronotum; C, head and pronotum, lateral view; D, tegmen; E, apical part of wing; F, anal segment of male and pygofer; G, medioventral process of pygofer and postero-ventral aspect of left genital style; H, aedeagus, left side; I, aedeagus, right side; J, genital style, lateral view.

lobe ventrally near base, a slender spinose process apically on right directed cephalad, an ensiform process and two unequal spinose processes distally on left, directed cephalad; a pair of rather long spinose processes arising at base of flagellum, directed cephalad and decurved distad; flagellum distally membranous, broadly tubular. Genital styles moderately long, narrow in basal two thirds, gradually widening distad, broad and curved dorsad in apical third.

Anal segment of female twice as long as broad, lateral margins parallel, anal foramen at apex. Ovipositor ensiform, shallowly curved upward, area between ovipositor and anal segment about as long as broad, its lateral margins not sharply defined. Pregenital sternite longer than broad, its lateral margins gradually diverging distad.

Male, length, 5.0 mm; tegmen, 7.0 mm.

Female, length, 6.5 mm; tegmen, 8.7 mm.

Holotype ♂, South Africa, Pondoland, Port St. John's, 16.x.1957 (*P. J. Stuckenberg*) in Natal Museum. Allotype ♀, South Africa, Pietermaritzburg, Town Bush (*B. & P. Stuckenberg*).

Family *DELPHACIDAE* Leach

Eurysa Fieber

Fieber, 1866, Verh. zool. bot. Ges. Wien 16: 520. Logotype, *Delphax lineata* Perris, 1897, Ann. Soc Linn. Lyon 4: 171.

Eurysa nigrocacuminis Muir

Muir, 1926, Ann. Mag. nat. Hist. (9) 17: 22.

South Africa, Karkloof Range nr. Mt. Alida, Geekie's Farm, 1,500 m, 19.XI.1963, 2 ♂ (*B. & P. Stuckenberg*).

Family *ACHILIDAE* Stål

Afrachilus mirabilis Fennah. Text-fig. 2, A-E

Fennah, 1965, *Zool. Beitr. N.F.* 2: 80. Orthotype, *Afrachilus mirabilis* Fennah *ibid.* : 81.

Anal segment of male in dorsal view more than twice as long as broad at apex, lateral margins straight, diverging distally, apical margin truncate or very shallowly convex, anal foramen at apex, anal style long, longer than pygofer, in dorsal view about twice as long as broad at widest part, in lateral view depressed. Pygofer relatively short, dorsolateral angles produced caudad; no medioventral process developed. Aedeagus long, subequal in width throughout, shallowly curved upward distad, tapering to a point at apex; a pair of slender spinose processes emerging ventrolaterally, directed dorsocaudad. Genital styles rather more than twice as long as broad, ventral margin convex, apical margin truncate, dorsal margin thickly callussed, produced laterad at one quarter from apex in a short spinose process, and mesad in a broad thumb-shaped lobe.

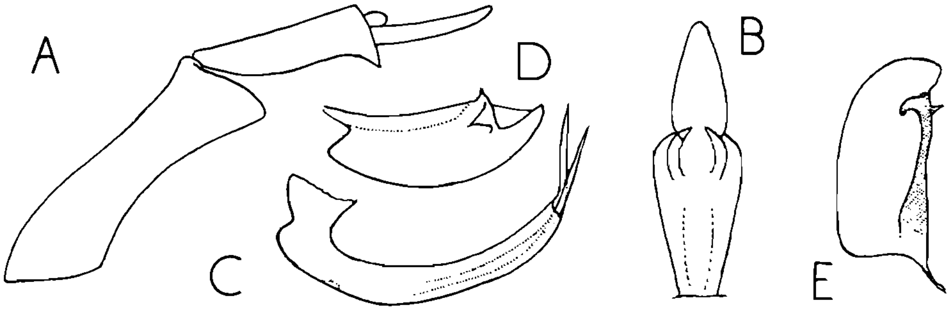

Fig. 2. *Afrachilus mirabilis* Fenn. A, Anal segment and pygofer, left side; B, anal segment of male, dorsal view; C, aedeagus, left side; D, left genital style, lateral view; E, left genital style, dorsal view.

There are examples in the British Museum (Nat. Hist.) from Cape Province, Swellendam 9-14.xii.1931 (*R. E. Turner*); and Katberg, 4,000 ft. 1-15.i.1933 (*R. E. Turner*).

The isolated position of this species indicated by its external morphology is reflected also in the structure of the male genitalia.

Brachypyrrhyllis gen.n.

Vertex slightly declivous, not quite twice as broad at base of middle line as long, basal margin shallowly concave, lateral margins slightly converging distad, anterior margin obtusely angulate, medially carinate; base of frons visible from above; frons slightly wider than long in middle line, transversely convex, basal margin straight or feebly convex, lateral margins sinuately diverging to level of antennae, then incurved, slightly extended laterad, median carina very feeble or absent; clypeus transversely convex, median carina absent, lateral carinae distinct, lora not or scarcely visible in anterior view; rostrum attaining post-trochanters, apical segment as long as subapical, antennae with basal segment very short, ring-like, second segment globose, third segment pyriform, widest distally; ocelli minute, eyes only a little longer than deep dorsoventrally. Pronotum about three quarters as long as vertex in same line, anterior margin convex, weakly excavate behind eyes, posterior margin concave, a little angulate at middle, median carina present, lateral carinae of disc very feeble, closely following hind margin of eyes and recurving to hind margin at level of tegulae, ventrolateral lobes broadly rounded; mesonotum three times as long as pronotum, tricarinate; post-tibiae with two or three spines laterally, eight or nine apically, basal metatarsal segment with ten or eleven teeth, second segment also with ten or eleven. Tegmina coelopterous, costal margin obtusely rounding into apical margin, latter acutely rounding to commissural margin, C simple, Sc + R forked at level of union of claval veins, M, Cu1 and Cu2 simple, claval suture not developed, anal veins uniting at level of middle of tegmen.

Posterior margin of seventh sternite transverse. Third valvulae with lateral portion subtriangular, narrowing distally and acute and thin at apex.

Type species, *Brachypyrrhyllis fuscoclypeata* sp.n.

This genus appears to be nearest to *Caffropyrrhyllis*, but differs in the small size of the ocelli, the form of the anterior margin of the pronotum, which does not shelve obliquely below the eyes but meets them compactly along a well defined line and in the broadly rounded ventrolateral lobes (as contrasted with the narrowly-rounded lobes of *Caffropyrrhyllis*).

The generic name is regarded as feminine in gender.

Brachypyrrhyllis fuscoclypeata sp.n. Text-fig. 3, A-K

Vertex broader at base of middle line than long in middle (1.5 : 1); frons wider at widest part than long in middle line (1.2 : 1), and than at base (1.5 : 1), frontoclypeal suture obscure, pronotum in middle line shorter than vertex (1 : 1.8), a shallow impression on each side of middle line, and two weak impressions on each side behind eyes. Tegmina longer than broad (about 2.6 : 1), shallowly convex, transverse veinlets very sparse, apical areolets short, not twice as long as broad.

Ochraceous or greyish stramineous; clypeus, depressions on pronotum, procoxae, mesonotum except for carinae, mesopleurites except at margins and abdominal segments except narrowly at margins, and pygofer, dark reddish brown. Tegmina subopaque, greyish, six or seven spots on costal margin, and interrupted suffusions overlying veins, light yellowish brown, apical areolets fuscous. Wings sordid white, with fuscous veins.

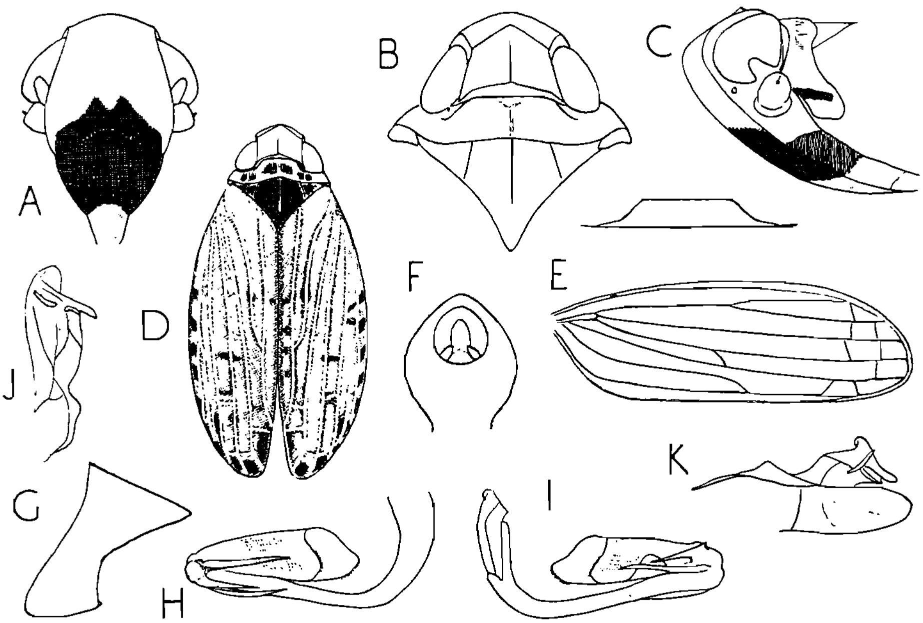

Fig. 3. *Brachypyrrhyllis fuscoclypeata* gen. et sp. n. A, Frons and clypeus; B, head and thorax; C, head and pronotum, side view; D, dorsal view of head, thorax and tegmina; E, tegmen; F, anal segment of male; G, pygofer, left side; H, aedeagus, right side; I, aedeagus, left side; J, right genital style, ventral view; K, right genital style, lateral view.

Anal segment of male in dorsal view almost as broad as long, margins convex, rounding into apical margin, anal foramen situated just distad of middle. Pygofer moderately long, dorsoventrally depressed, dorsolateral angles each strongly produced caudad in a stout subconical process, acute at apex, medioventral process short, broadly triangular. Aedeagus rather long, narrowly tubular basally, widening distad, ventral surface hollowed between its lateral margins; a spinose process arising on left at apex, directed cephalad for two fifths length of aedeagus; a shorter narrowly triangular process dorsally at apex on left, directed cephalad, two unequal spinose processes arising laterally on right at apex, directed cephalad, a third spinose process arising dorsally on right, directed cephalad, a tectiform membranous flagellum directed cephalad above aedeagus, left side projecting further basad than right side, apical margin minutely denticulate. Genital styles L-shaped in transverse section, ventral lobe deeply rounded at apex, vertical lobe with dorsal margin bearing a broad bicuspidate process with an oblique ridge on its inner surface, and two spines, directed towards one another, on outer surface.

Pregenital sternite of female quadrate, rather longer than preceding segment, posterior margin transverse, subvaginal plate one third as broad as pregenital sternite, shallowly truncate-convex. Third valvulae acute at apex.

Male, length, 3.5 mm; tegmen, 3.0 mm. Female, length, 4.5 mm; tegmen, 4.0 mm.

Holotype ♂, South Africa, Cape Province, Worcester, ix-x.1931 (*R. E. Turner*) Brit. Mus. 1931-528. in B.M. (N.H.). 1 ♂, 1 ♀ same data.

The female genitalia differ from those in *Caffropyrrhyllis bicuspidata* in having a distinctly sclerotised subvaginal plate, and in the lateral portion of the third valvulae being almost equilaterally triangular, whereas in *C. bicuspidata* there is no evident subvaginal plate, and the corresponding part of the third valvulae is quadrate or subrhomboidal.

Family *DICTYOPHARIDAE* Spinola

Risius Stål

Stål, 1859, Fregatten Eugenies Resa, 4: 274. Haplotype, *Risius spurcus* Stål, *loc. cit.*

Risius spurcus Stål. Text-figs. 4, A, B

Vertex slightly broader at base than long in middle (1.13 : 1), produced before eyes for about one third length of an eye, lateral margins parallel between eyes, converging distad of eyes, rounding to meet obtusely at apex of head, disc with median carina distinct, percurrent; frons longer in middle line than wide at widest part (1.3 : 1), lateral margins virtually meeting in middle line and united with median carina basally, sinuately expanding to below level of antennae, then strongly incurved to suture, median carina distinct throughout, sublateral carinae obsolete, a row of four or five pustules near each lateral margin; clypeus tricarinate, rostrum reaching to post-trochanters, subapical segment longer than apical, antennae with second segment cylindrical, widening distad, distally truncate. Pronotum little more than half as long as vertex in middle line, anterior margin transverse, posterior margin shallowly concave, disc tricarinate with lateral carinae convex, a carina

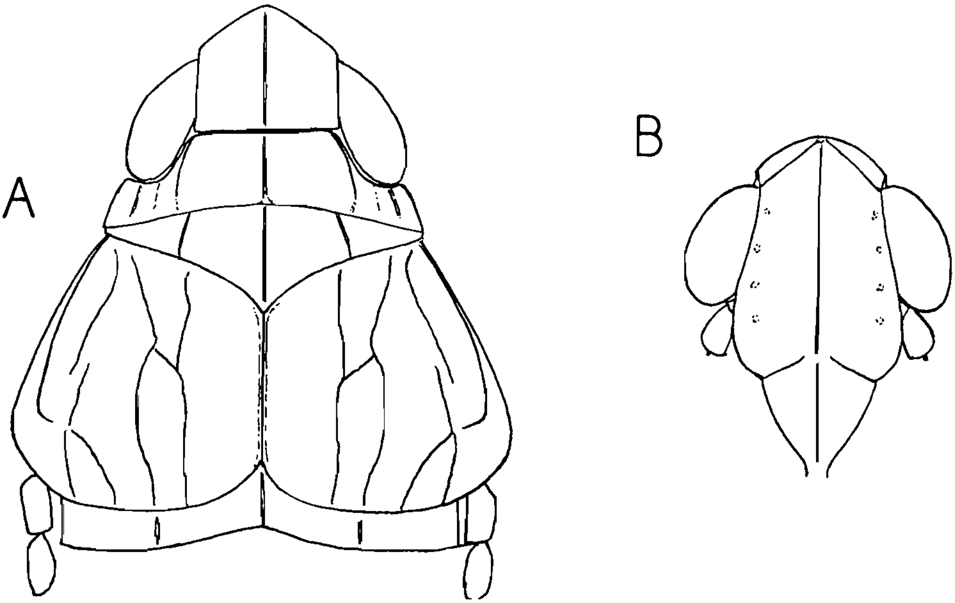

Fig. 4. *Risius spurcus* Stål A, Head, thorax, tegmina and base of abdomen, dorsal view; B, frons and clypeus.

at each lateral margin between eye and base of tegmen, an indication of one or two supernumerary carinae on each side between lateral discal carina and lateral margin; mesonotum longer than pronotum (nearly 1.5 : 1), tricarinate; femora and tibiae of fore and middle legs slightly compressed, post-tibiae with four spines laterally, six apically, basal metatarsal segment with seven teeth apically, second segment also with seven teeth; tegmina subquadrate, costal margin a little shorter than apical margin, longer than commissural margin (about 1.3 : 1), costal vein distinct, percurrent, Sc prominent, not reaching apical margin, M feeble, Cu and PCu irregular but distinguishable.

This supplementary description is based on a specimen in the Naturhistoriska Riksmuseum, Stockholm, labelled '*Risius spurcus* Stål. Type.'

Risius limonias sp.n. Text-fig. 5, A-G

Vertex longer than broad (1.25 : 1), lateral margins parallel between eyes, converging distad of eyes, meeting acutely at apex, disc shallowly hollowed, ecarinate; vertex produced before eyes for much more than length of an eye. Frons longer in middle line than wide at widest part (1.7 : 1), basal margin strongly convex, lateral margins convex, united with median carina at base, diverging distad below level of antennae then incurved to suture, median carina prominent in basal half, distinct in apical half, intermediate carinae of frons distinct only in apical half, midway between median carina and lateral margins, a

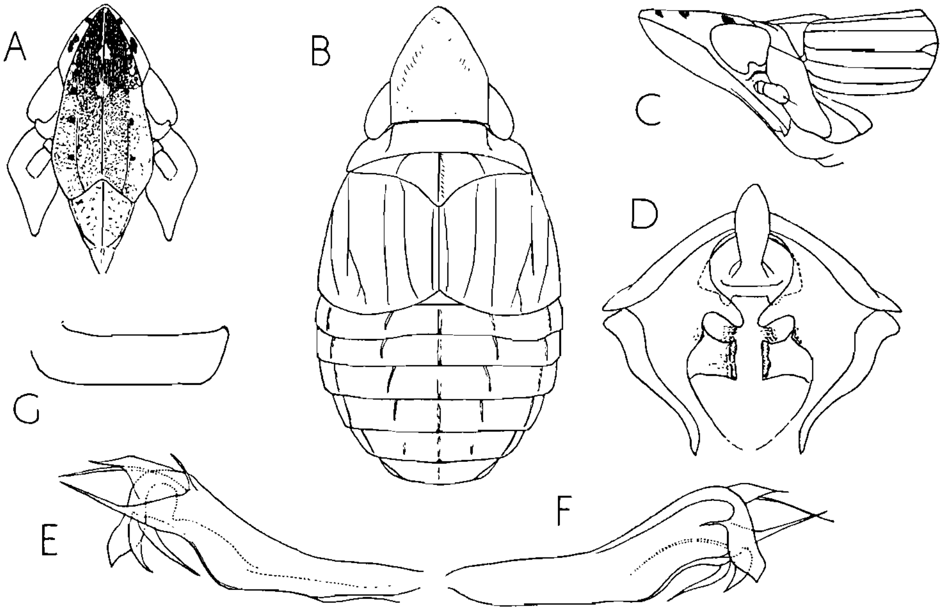

Fig. 5. *Risius limonias* sp. n. A, Frons, clypeus and lateral lobes of pronotum; B, dorsal surface of body; C, head, pronotum, mesonotum and tegmen, lateral view; D, tergite and sternites of eighth segment, pygofer (showing dorsolateral lobes inflected ventromesad), basal lobes of aedeagal suspensorium, and anal segment, posterior view; E, aedeagus, right side; F, aedeagus, left side; G, genital style, lateral view.

row of about five widely-spaced pustules between intermediate carinae and margin; clypeus tricarinate; rostrum just attaining post-trochanters, antennae with second segment cylindrical, nearly twice as long as broad. Pronotum with disc carinate on each side, median carina absent, a single strong carina on each side between eye and tegula; mesonotum tricarinate, with median carina strongly developed; femora and tibiae of fore and middle legs rather compressed, post-tibiae with three spines laterally, five apically, basal metatarsal segment with seven teeth apically, second segment with seven teeth. Tegmina quadrate, a little broader than long, C and Sc + R strongly developed, M, Cu and anal vein present, more or less parallel, corium relatively smooth with reticulation immersed.

Yellowish-brown, minutely and densely sprinkled with dark fuscous, so densely on frons, clypeus, antennae, lateral lobes of pronotum, pleurites and legs as to make these appear almost uniformly fuscous; two small spots on frons in middle line and sides of head pale, latter with a few distinct dark spots. Tegmina with veins ochraceous-brown, intervenal areas heavily sprinkled with minute fuscous spots.

Anal segment of male very short, almost completely recessed into body, tubular, broader than long, slightly compressed dorsoventrally, anal style about as long as anal segment. Pygofer short, closely united with eighth abdominal segment and almost completely inflected mesad; dorsolateral angles each produced in a finger-like lobe directed mesoventrad. Aedeagus long, its base extending cephalad deeply into abdominal cavity, and comprising (1) a pair of long, pigmented, distally expanding suspensorial arms, (2) a long, parallel sided and distally curved basal apodeme, and (3) a long tubular evertible penis, directed caudad, distally ascending then abruptly decurved, and armed dorsally in distal fifth with (*a*) two pairs of asymmetrical spinose processes directed caudad, the basal pair of processes very slender, (*b*) a pair of asymmetrical spinose processes directed ventrocephalad, (*c*) a short submembranous blade-like curved process directed posteroventrad and (*d*) a slightly longer curved ridge resembling a spinose process directed ventrocephalad; distal ventral margin of aedeagus convex. Genital styles fused together along middle line except in distal quarter, forming a boat-like structure with ventral margin, in side view, straight, and apical margin deeply cleft at middle.

Male, length, 3.6 mm.

Holotype ♂, South Africa, Cape Province, George District, Outeniqua Pass, 24.x.1964 (*B. & P. Stuckenberg*), in Natal Museum.

This species is distinguished by the proportions of the vertex in combination with the absence of a median carina. The latter character serves to separate it from *R. darwini* Fenn., which has a well developed median carina on the vertex. From *R. spurcus* Stål it differs in the relatively longer head and in the absence of supernumerary carinae on the pronotum between the lateral carinae of the medial disc and the lateral margins.

Risius gibbus sp.n. Text-fig. 6, A-H

Vertex broader at base than long in middle line (1.6 : 1), extending before eyes for less than length of an eye, basal margin transverse, lateral margins distinctly convex, apical margin obtusely angularly convex, disc shallowly depressed, ecarinate; frons slightly longer in middle than wide at widest part (not quite 1.1 : 1), lateral margins diverging from base to below level of antennae, then strongly incurved, disc of frons curved anteriorly near base, median carina weakly but distinctly present in this portion, otherwise absent; clypeus tricarinate, with median carina feeble, in profile strongly convex; rostrum not quite attaining post-trochanters, apical segment distinctly shorter than subapical, antennae with second segment cylindrical, not twice as long as broad, obliquely rounded-truncate distally. Pronotum not quite half as long as vertex, anterior margin transverse, posterior margin shallowly concave, lateral carinae of disc rather elevated, median carina absent, a distinct carina on each side between eye and base of tegmen; mesonotum slightly longer than vertex, disc ascending caudad, median and lateral carinae each elevated to form a deep flange, median carina forked basally, each limb curving laterocaudad into posterior margin; femora and tibiae of fore and middle legs slightly compressed, post-tibiae with three or four spines laterally, five apically, basal metatarsal segment with seven teeth apically, second metatarsal also with seven teeth. Tegmina broader than long, costal margin longer than commissural margin (almost 3 : 1), apical angle acutely rounded, apical margin convex, costa and Sc + R prominent, remaining venation feeble, ill defined. Abdominal tergites strongly elevated along middle line, and with a row of strongly elevated longitudinal carinae on each side, a less elevated longitudinal carina near each lateral margin.

Light reddish brown, lightly and unevenly sprinkled with fuscous; femora, two diffuse transverse bands on protibiae and mesotibiae, post-tibial spines and abdomen laterally, fuscous.

Tergum of eighth abdominal segment with posterior margin broadly excavate at middle, and produced caudad in a small lobe at each corner of excavation. Anal segment tubular, little longer than broad, almost completely recessed below eighth tergum. Pygofer extremely short, membranous in dorsal half, weakly sclerotised in ventral half, forming merely a narrow lining extending mesad along hind margins of seventh sternite and lateral margins of eighth tergite, and extending basad, below eighth tergite, as a narrow membrane to base of anal segment, posterior opening wide, as broad as long. Aedeagal suspensorium comprising a small subtriangular plate below anal segment, from which a pair of sclerotised rami extend laterocaudad, each ramus narrowly tubular, feebly sinuate, but flaring abruptly at distal apex into a broadly triangular lobe which projects caudad beyond transverse membrane of pygofer. Aedeagus tubular, shallowly curved upward distad, rather compressed dorsoventrally, a pair of slender spinose processes arising ventrally at apex, directed cephalad, then curving laterad, a pair of stout, spinose processes arising dorsally at apex, directed dorsolaterad, that on right side strongly sinuate, that on left side curved, dorsal margin of aedeagus near apex strongly produced dorsad in a pair of broad, leaf-like lobes, each acute at apex and not quite meeting its fellow in middle line. A pair of submembranous lenticular lobes, each broader than long, extending caudad from lower margin of transverse membrane of pygofer. Genital styles fused together in middle line, together forming an almost circular plate, slightly broader than long and weakly notched in middle line distally. Male, length, 3.0 mm.

Holotype ♂, South Africa, Northern Transvaal, Wylie's Poort, 7.ii.1941 (*A. L. Capener*) in B.M. (N.H.).

This species is distinguishable from all others of the genus so far known by the curiously elevated mesonotal disc, as well as by the structure of the male genitalia.

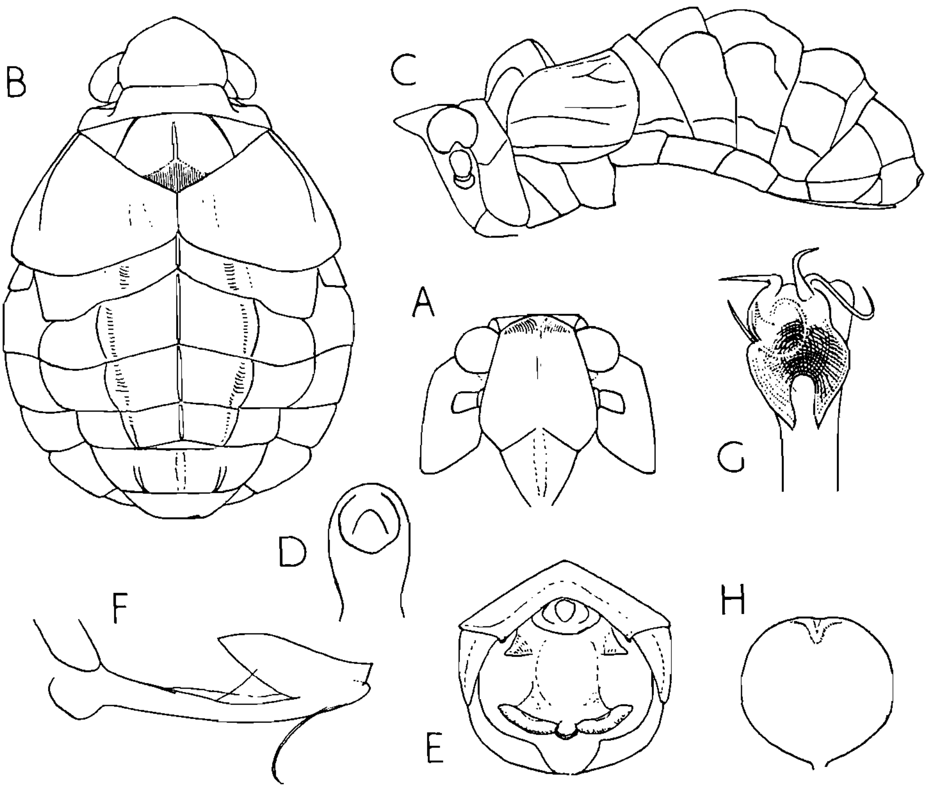

Fig. 6. *Risius gibbus* sp. n. A, Frons, clypeus and lateral lobes of pronotum; B, dorsal surface of body; C, head, thorax and abdomen, lateral view; D, anal segment of male, dorsal view; E, eighth segment of male, showing small apical lobes on posterior dorsal margin (stippled), basal lobes and apical ends of aedeagal suspensorium, pygofer and anal segment, posterior view; F, aedeagus, left side; G, apical part of aedeagus, dorsal view; H, fused genital styles, posterior view, distal margin at top.

The type specimen is extensively covered with tightly adhering particles, including crystalline fragments and minute reddish granules. These appear to have been derived from soil, but it is not known in what circumstances.

Risius belona sp.n. Text-fig. 7, A-F

Vertex longer than broad at anterior margin of eyes (nearly 3.6 : 1), extending before eyes for three times length of an eye, basal margin transverse, lateral margins parallel between eyes, then gradually converging distad and finally rounding at apex to meet in middle line, median carina present on basal two-thirds, prominent in basal half, distally forking and giving off a band to each lateral margin, disc flat basally, shallowly hollowed distally; frons longer in middle line than broad at widest part (3 : 1), lateral margins obscure above level of eyes, gradually diverging to below level of antennae, then incurved to fronto-clypeal suture, disc weakly transversely convex, almost flat apically, becoming more strongly convex basad until it is V-shaped at base, median carina present throughout, prominent in basal fifth; clypeus tricarinate, with median carina feeble; rostrum just attaining post-trochanters, subapical segment distinctly longer than apical segment; antennae with second segment subcylindrical, slightly widening distad, rounded—truncate at apex. Pronotum half as long as an eye, anterior margin transverse, posterior margin shallowly concave, disc tricarinate with carinae well developed, a carina on each lateral margin between eye and base of tegmen, and an incomplete supernumerary carina just mesad of this marginal carina, anterior margin of pronotum just laterad of disc not fitting closely against hind margin of eyes; mesonotum longer than pronotum (1.6 : 1), tricarinate; femora and tibiae of fore and middle legs slightly compressed, post-tibiae with two spines laterally, one of them at base, the other just distad of middle, five spines at apex; basal metatarsal segment with seven teeth apically, second metatarsal also with seven. Tegmina trapezoidal, costal margin a little shorter than apical margin, longer than commissural margin, apical margin shallowly convex, slightly oblique; costal vein distinct to apex, veins Sc + R, Cu and anal vein equally spaced, the first two subdividing into a weak reticulum in distal third of tegmen, the last simple to apical margin.

Light yellowish brown, finely sprinkled with dark reddish brown; a broad band, of almost equal width throughout, from apex of vertex to tip of mesonotum, and a band on each side, from apex of head, across genae and metapleura, more heavily suffused with fuscous; metepisternum fuscous, not sprinkled; distal part of frontal disc stramineous in middle, light orange brown towards margins.

Anal segment of male very short, recessed below tergum of eighth segment, broader than long (2 : 1), apical margin transverse, deeply quadrately excavate at middle; anal

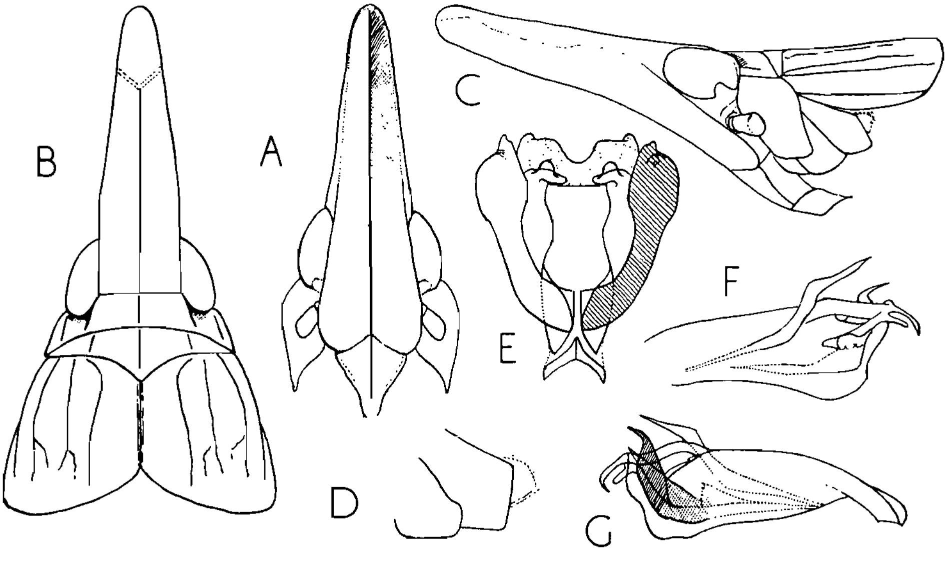

Fig. 7. *Risius belona* sp. n. A, Frons, clypeus, and lateral lobes of pronotum; B, head, thorax and tegmina, dorsal view; C, head, thorax and tegmen, lateral view; D, left mesepisternum and mesepimeron, lateral view; E, anal segment of male, (stippled) ventral view, arms of aedeagal suspensorium, with basal lobes convolute, and pygofer (one half indicated by oblique shading); F, aedeagus, left side; G, aedeagus, right side.

style short. Pygofer very short, transverse, weakly sclerotised, produced caudad at each lateral angle in a bluntly conical process. A pair of short and broad triangular lobes projecting caudad from transverse membrane of pygofer a little mesad of dorsolateral angles. These processes basally united with arms of aedeagal suspensorium, which are long, sclerotised and sinuate. Aedeagus long, tubular, gradually widening distad; a pair of unequal spinose processes arising ventrally at apex, that on right spinose, sinuate, directed dorsocaudad, that on left, partly overlapped at base by an inflected lobe, dorsoventrally compressed, directed mesad, then abruptly tapering into a short curved spine; two processes emerging dorsally at apex of aedeagus, that on right sinuate, spinose, directed caudad, that on left rather short, distally bifid. Genital styles slightly unequal, fused together in basal fifth, and distally incurved, ventral and dorsal margins parallel, apical margin oblique, apical angle rounded.

Male, length, 4.0 mm.

Holotype ♂, South Africa, Cape Province, Tsitsikama Area, Coldstream, 25-28 .x. 1962 (*B. & P. Stuckenberg*), in Natal Museum.

This species is distinguishable from all others by the long cephalic process. In the structure of the aedeagus it perhaps comes nearest to *R. omega.* The specific name is from the Greek βελονη, a spear-head.

Risius porrectus sp.n. Text-fig. 8, A-E.

Vertex longer than broad at anterior margin of eyes (2.6 : 1), ascending distad, extending before eyes for 2.7 times length of an eye, basal margin transverse, lateral margins parallel, or very slightly diverging distad, between eyes, then gradually converging distad and finally strongly rounding to meet in middle line apically, median carina present in basal two thirds, prominent in basal half, distally forking and giving off a branch to each lateral margin, disc convex basally, shallowly hollowed distally, rather coarsely punctate and distally a little transversely rugose; frons longer in middle line than broad at widest part (2.8 : 1), lateral margins obscure above level of eyes, gradually diverging to level of eyes, then feebly sinuately diverging to below level of antennae, then incurved to frontoclypeal suture, disc coarsely punctate, weakly transversely convex distally, more strongly convex in basal half, and deeply convex at base, median carina feebly present at base and sometimes also in distal quarter, otherwise absent; clypeus tricarinate, with median carina feeble; rostrum just attaining post-trochanters, subapical segment rather longer than apical segment; antennae with second segment subcylindrical, widening distad, obliquely truncate at apex. Pronotum slightly less than half as long as an eye, anterior margin transverse, posterior margin shallowly concave, coarsely punctate, disc tricarinate with lateral carinae strongly convex, a carina at each lateral margin between eye and base of tegmen, and a rather weak supernumerary carina just mesad of this marginal carina, anterior margin of pronotum immediately laterad of disc fitting tightly against hind margin of eyes; mesonotum longer than pronotum (1.5 : 1), coarsely punctate, tricarinate with median carina rather strongly developed; femora and tibiae of fore and middle legs slightly compressed, post-tibiae armed only with a bluntly pointed eminence at base, and with five teeth at apex; basal metatarsal segment with seven teeth apically, second segment also with seven. Tegmina trapezoidal, costal margin a little shorter than apical margin, longer than commissural margin, apical margin shallowly convex or sinuate, slightly oblique, costal vein distinct to apex, Sc + R and anal vein moderately distinct to apex, M and Cu variable in degree of distinctness, intervenal areas coarsely and shallowly punctate.

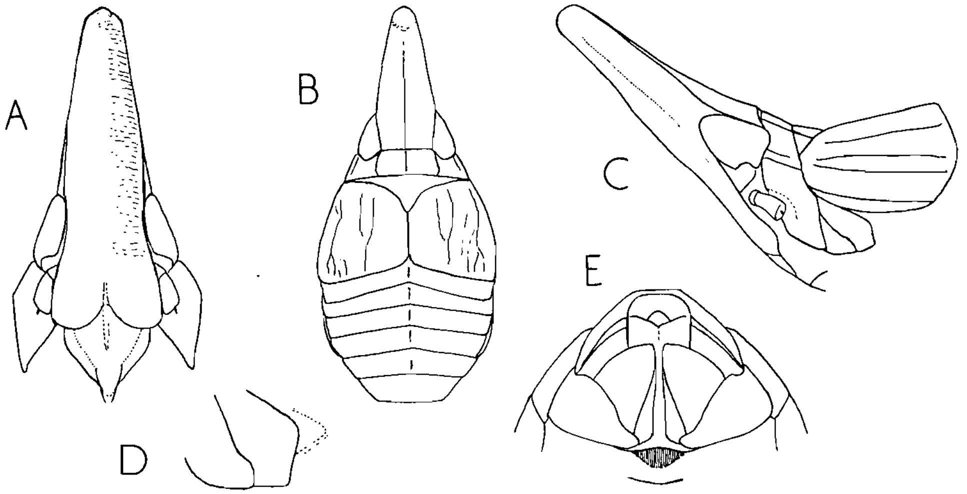

Fig. 8. *Risius porrectus* sp. n. A, Frons, clypeus and lateral lobes of pronotum; B, dorsal surface of body; C, head, thorax and tegmen, lateral view; D, left mesepisternum and mesepimeron, lateral view; E, female genitalia, posteroventral view.

Light yellowish brown, so heavily sprinkled with dark brown as to appear for the most part fuscous; clypeus and genae below antennae tinged orange-brown; abdomen posteriorly mostly pale ochraceous. Tegmina brown, lighter than adjacent abdominal tergites.

Female genitalia as figured.

Female, length, 3.8 mm.

Holotype ♀, South Africa, Cape Province, George District, Outeniqua Pass, 24.x.1964 (*B. & P. Stuckenberg*) in Natal Museum.

One ♀, same data.

This species resembles only *R. belona*, and can be readily distinguished as follows.

Derm not punctate; vertex more than three times as long as broad; lateral margins of frons distinct at level of eyes; emargination below eye subrectangular; pronotum with anterior margin not fitting closely against hind margin of eye, lateral carinae of disc straight or feebly sinuate; posterodorsal angle of metepimeron distinctly and obtusely angulate; post-tibiae with two stout spines laterally .. .. **belona**

Derm coarsely punctate; vertex less than three times as long as broad; lateral margins of frons rather obscure at level of eyes; emargination below eye subacute; pronotum with anterior margin fitting closely against hind margin of eye, lateral carinae of disc distinctly convex; posterodorsal angle of metepimeron obtusely rounded; post-tibiae laterally armed with only a bluntly pointed eminence at base .. .. **porrectus**

Risius patroclus sp.n. Text-fig. 9, A-G

Vertex turbinate, as long in middle as broad at base, basal margin transverse, lateral margins parallel between eyes then converging to meet in middle at apex of head, disc depressed, median carina obsolete or very weak and incomplete; frons slightly longer in middle than broad at widest part (nearly 1·2 : 1), basal margin convex, lateral margins virtually meeting basally at middle, gradually and sinuately diverging to below level of antennae, then incurved to frontoclypeal suture, median carina fine, prominent, percurrent, frons in profile straight, retreating distad; rostrum just attaining post-trochanters, apical segment shorter than subapical; antennae with basal segment short, ring-like, second segment shortly cylindrical, widening distad, truncate distally. Pronotum in middle line little more than a third length of vertex, disc tricarinate, lateral discal carinae convex, lateral margins carinate between eye and base of tegmen, a feeble, incomplete supernumerary carina on each side between discal carina and lateral margins, mesonotum slightly more than twice as long as pronotum, tricarinate, with median carina strongly elevated; post-tibiae with three spines laterally, five apically, basal metatarsal segment with six (sometimes

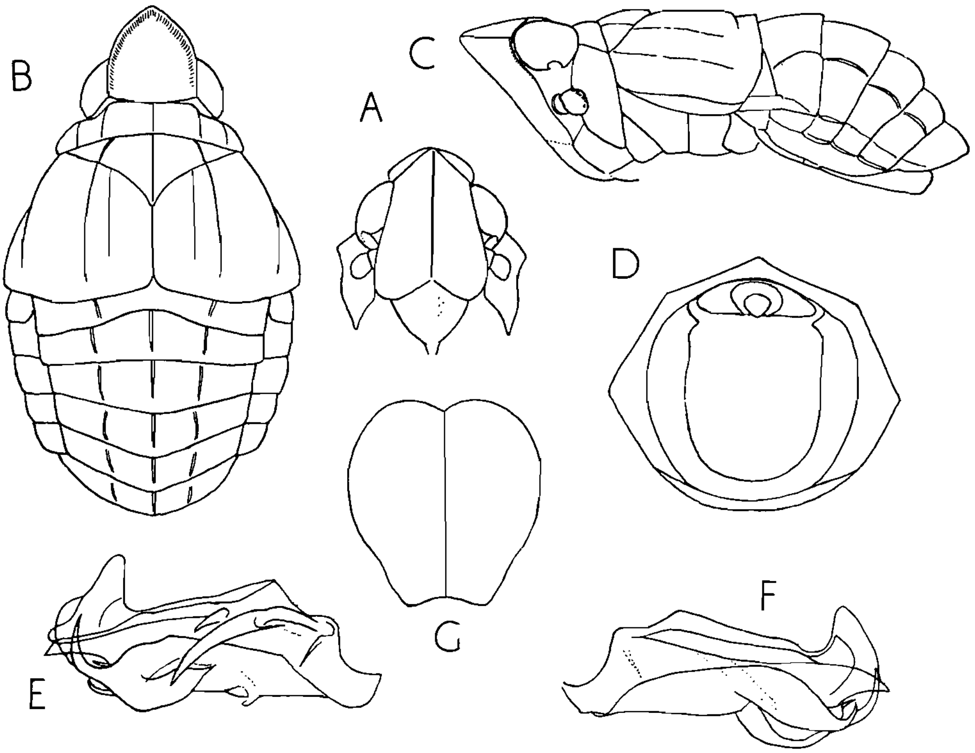

Fig. 9. *Risius patroclus* sp. n. A, Frons, clypeus and lateral lobes of pronotum; B, dorsal surface of body; C, head, thorax and abdomen, lateral view; D, eighth abdominal segment of male, pygofer and anal segment, posterior view; E, aedeagus, right side; F, aedeagus, left side; G, genital styles, ventral view.

eight) teeth, second segment with six; tegmina subquadrate, costal margin not quite as long as apical margin, and longer than commissural margin, C and Sc + R well developed, the latter not reaching apical margin, PCu and first anal vein subparallel, not reaching apical margin; abdominal tergites each medially carinate and with a distinct longitudinal carina between this and lateral margin on each side.

Dull yellowish brown, heavily sprinkled and marbled with fuscous, a band across frons basally, and a broad suffusion from middle of vertex to tip of mesonotum, dark fuscous. Tegmina dull yellowish brown sprinkled with fuscous, darker in basal half.

Anal segment of male ring-like, broader than long, completely recessed below eighth tergite, apical margin concave, lateroapical angles angulately produced caudad, anal style cylindrical, more than twice as long as broad. Pygofer extremely short, weakly sclerotised, forming merely a narrow rim extending mesad along hind margin of seventh sternite and lateral margins of eighth tergite, and extending as a narrow membrane below eighth tergite to base of anal segment. Aedeagal suspensorium comprising a pair of long, twisted, subtaeniate rami inflected at their mid point to meet in middle line, then extending dorsad, and each finally expanding in a lobe, twice as long as broad and with sinuate margins, directed mesocaudad; aedeagus subtubular, slightly laterally compressed, in basal half with dorsal margin sinuate and ventral margin straight, a rather short straight slender spinose process arising dorsally near base directed meso-ventrocaudad, a large stout spinose process, shallowly decurved or sinuate, arising dorsally at one quarter from base, directed ventrocaudad and to right, a broadly lenticular vertical lobe developed laterally on right in apical third, abruptly narrowing distad and curving dorsad in a slender spinose process; mesad of this lobe, and level with base of its apical process, a very small vertical lobe terminating in a small short slender spinule; left side of aedeagus in its lower half developed as a deep longitudinal flange, narrowing abruptly near apex and upcurved in a short spinose process; right and left dorsal margins of aedeagus each developed as a horizontal flange, that on left weakly, that on right strongly, produced laterad just before apex, each then abruptly tapering to acutely-rounded apex; between these lobes distally a thin vertical plate, apically convex. Genital styles apposed along their inner (ventral) margins, outer (dorsal) margins sinuately convex, each rounding distally to meet inner margin at an obtuse angle.

Male, length, 3.0 mm.

Holotype ♂, South Africa, Cape Province, Humansdorp District, Karreedouw Mountains, near Assegaaibos, 28.x.1964 (*B. & P. Stuckenberg*), in Natal Museum.

1 ♂, 1 ♀, same data.

This species differs from *R. spurcus* and *R. darwini* in proportions of the vertex, and from other species of which males are known in the structure of the male genitalia.

Risius palamedes sp.n. Text-fig. 10, A-C

Vertex slightly ascending, broader at base than long in middle (1.5 : 1), basal margin transverse, lateral margins weakly convergent distad between eyes, then strongly converging and rounding to meet in middle at apex of head, disc shallowly impressed, median carina absent; frons longer in middle line than broad at widest part (1.2 : 1), basal margin convex, lateral margins not meeting in middle line basally, sinuately diverging to below level of antennae then strongly incurved to frontoclypeal suture, median carina distinct in basal half, feeble distally, frons in profile shallowly concave, retreating distad; rostrum not quite attaining post-trochanters, apical segment shorter than subapical; antennae with basal segment short, ring-like, second segment shortly cylindrical, widening distally, obliquely rounded-truncate apically. Pronotum in middle line rather less than half as long as vertex, disc carinate laterally, median carina very feeble, a strong carina at each lateral margin between eye and base of tegmen; mesonotum not quite twice as long as pronotum, with lateral carinae complete, median carina elevated in basal two thirds, absent on anterior third, post-tibiae with three spines laterally, five apically, basal metatarsal segment with eight teeth apically, second segment also with eight. Tegmina trapezoidal, costal margin about four-fifths as long as apical margin, commissural margin shorter than mesonotum, C and Sc + R prominent, latter not attaining apical margin, other longitudinal veins irregular and almost immersed; abdominal tergites each very strongly carinate medially and with an elevated longitudinal carina between this and lateral margin on each side.

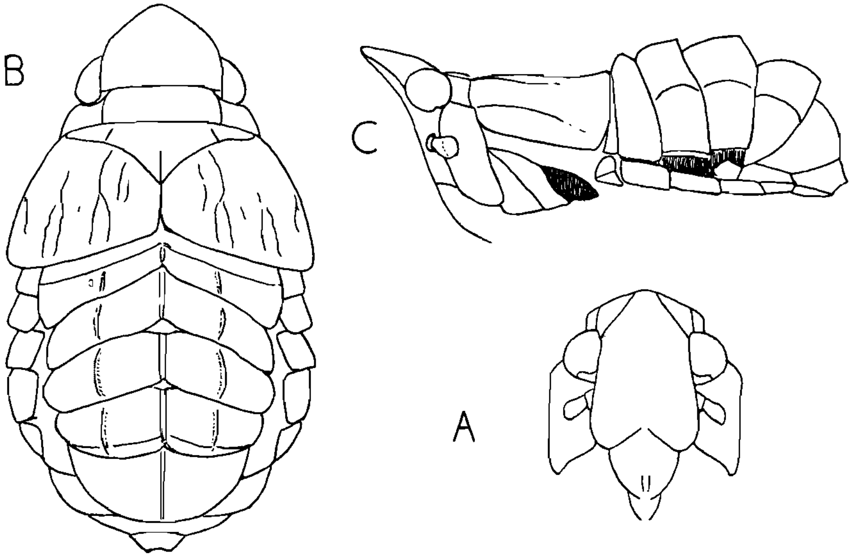

Fig. 10. *Risius palamedes* sp. n. A, Frons, clypeus and lateral lobes of pronotum; B, dorsal surface of body; C, head, thorax and abdomen, lateral view.

Sordid yellow, sprinkled and suffused fuscous; frons, clypeus, lateral lobes of pronotum, pleurites and abdomen dorsally more heavily infuscate.

Anal segment of female small, concealed below eighth tergite. Third valvulae thick, rather narrow, broadly callused along mesal margin. Pregenital sternite not longer than preceding segment.

Female, length, 4.6 mm.

Holotype ♀, South Africa, Rustenburg, 8-15.ix.1948 (*A. L. Capener*) 1♀, Rustenburg. 2.I.44, Brit. Mus. 1952-254, in B.M. (N.H.).

This species is distinguishable by the proportions of the vertex and thorax, by the tegminal structure and by the number of apical teeth on the post-tibiae and post-tarsal segments.

Risius astyanax sp.n. Text-fig. 11, A-H

Vertex broader at base than long in middle (1.3 : 1), basal margin transverse, lateral margins parallel between eyes then converging to meet in middle at apex of head, disc only very shallowly depressed, median carina prominent, percurrent; frons slightly longer in middle than broad at widest part (slightly less than 1.1 : 1), basal margin angulately convex, lateral margins basally not meeting at middle line, gradually diverging to below level of antennae, then incurved to suture, median carina prominent from base to apex, frons in profile straight, retreating distad; rostrum just attaining post-trochanters, apical segment shorter than subapical; antennae with basal segment short, ring-like, rather thickened on anterior surface; second segment irregularly ovoid; third segment short, as broad as long. Pronotum shorter than length of an eye, anterior margin transverse, posterior margin shallowly concave, disc tricarinate; two weak impressions behind eyes; a single carina laterally between eye and base of tegmen, mesonotum twice as long as pronotum in middle line, disc tricarinate with median carina elevated on a broad ridge; post-tibiae with three spines laterally, six apically; basal metatarsal segment with six teeth, second segment also with six. Tegmina subquadrate; costal margin only a little shorter than apical margin, and longer than commissural margin, C and Sc + R well developed, remaining longitudinal veins less so, and slightly irregular.

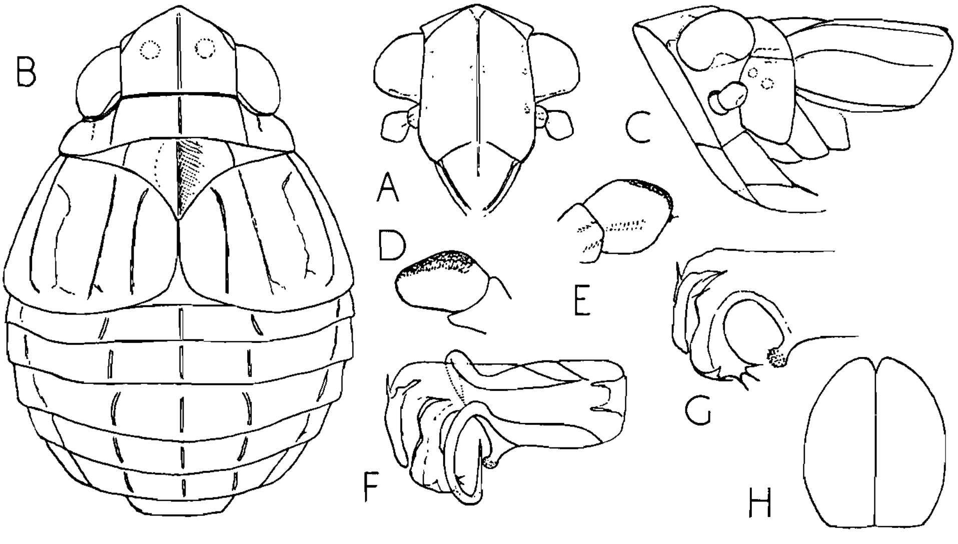

Fig. 11. *Risius astyanax* sp. n. A, Frons and clypeus; B, dorsal surface of body; C, head, thorax and tegmen, lateral view; D, antenna, dorsal view; E, antenna, anterior view; F, aedeagus, dorsal view; G, apical lobes of aedeagus, dorsal view; H, genital styles, ventral view.

Yellowish-brown, with darker suffusion between carinae; frons fuscous, a spot in middle line at base, a spot at middle, two small spots on basal margin, a spot before each eye, and about four small spots a little inside each lateral margin dull ivory-yellow. Tegmina yellowish brown, slightly darker in intervenal areas.

Anal segment of male ring-like, broader than long, completely recessed below eighth tergite, apical margin shallowly concave, anal style rather broadly ovoid. Pygofer extremely short, weakly sclerotised, forming merely a narrow rim extending mesad along hind margin of seventh sternite and lateral margins of eighth tergite, and extending basad as a narrow membrane below eighth tergite to base of anal segment. Aedeagal suspensorium comprising a subtriangular plate from which a pair of subtaeniate rami extend laterocaudad, each terminating in a sclerotised convoluted lobe situated laterodorsally in transverse membrane of pygofer; aedeagus tubular, shallowly curved upward distad, ventral surface sclerotised, lateral and dorsal surfaces membranous, ventral surface on right side produced laterad at middle in a short lobe about twice as long as broad, minutely spiculate distally; distally ventral margin produced in a broad lobe directed to right, with three small slender spinose processes on its outer margin, apically a broad lobe extending transversely, with two or three small spines on its lateral margin; an unequal pair of long stout spinose processes arising dorsally at base of aedeagus, both extending cephalad for three-quarters of length of aedeagus; both processes curved laterad then downward and mesad, that on right side longer than that on left. Genital styles apposed along their inner (ventral) margins, outer (dorsal) margin convex, strongly rounding at apex to join inner margin.
Male, length, 2.5 mm.

Holotype ♂, South Africa, Orange Free State, Witzieschoek, 6,100 ft., 23.ii.1929 (*Dr. Hugh Scott*) in B.M. (N.H.).

This species is distinguished by the proportions of the vertex in combination with the presence of a percurrent median carina, by the shape of the antennae (of which the peculiarities are best observable in anterior view) by bodily size, and by the structure of the male genitalia.

Risius omega sp.n. Text-fig. 12, A-I

Vertex longer than broad at anterior margin of eyes (about 1.6 : 1), basal margin transverse, lateral margins parallel between eyes, or slightly diverging distad, converging distad of eyes and meeting at apex; disc shallowly depressed, coarsely transversely rugose, medially carinate in basal half, and with a pair of oblique carinae from apex of median carina to lateral margins; frons in anterior view as broad between eyes as long from frontoclypeal suture laterally to level of upper margin of eye, disc transversely weakly convex in distal half, strongly convex, boat-shaped, in basal half, median carina prominent in basal half, absent in distal half, disc coarsely wrinkled, lateral margins carinate, postclypeal portion of clypeus tricarinate, about as broad as long; rostrum slightly surpassing posttrochanters, ocelli absent, antennae with basal segment ring-like, slightly tumid, second segment a little longer than broad, slightly compressed, a little produced beyond point of insertion of third segment, eyes reniform, excavate below, horizontal. Pronotum shorter than length of an eye, anterior margin of disc transverse, posterior margin shallowly concave, median and lateral discal carinae prominent, two strong carinae on each side between

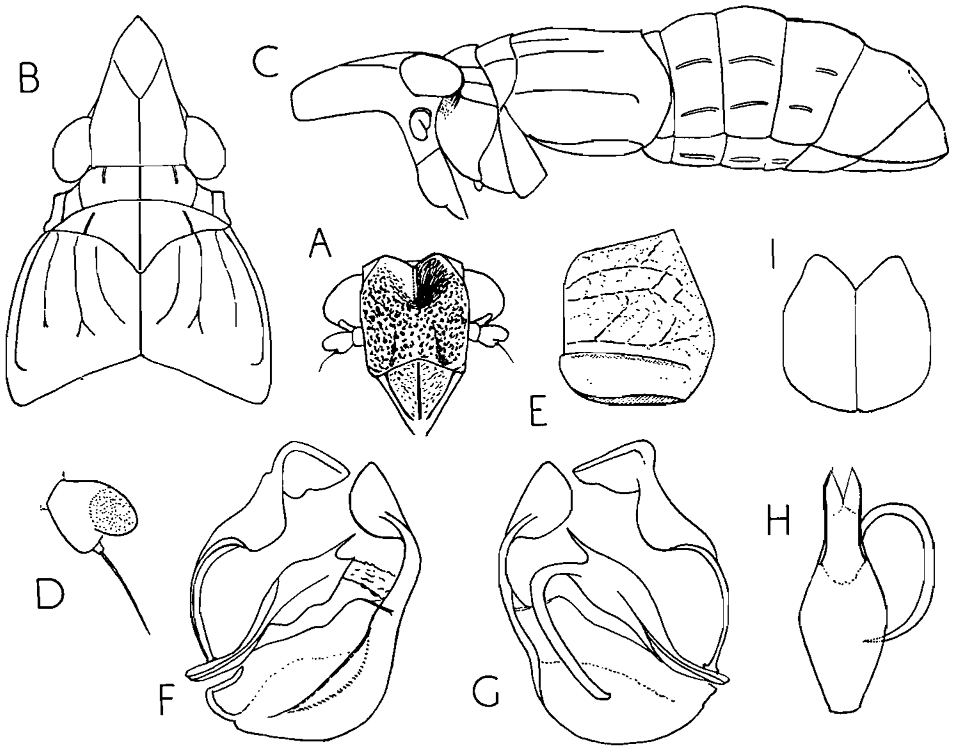

Fig. 12. *Risius omega* sp. n. A, Frons and clypeus; B, head, thorax and tegmina, dorsal view; C, head, thorax and abdomen, lateral view; D, antenna; E, left tegmen, dorsolateral view; F, aedeagus, including left arm of suspensorium, left side; G, aedeagus, including right arm of suspensorium, right side; H, posteroventral surface of aedeagus, and process of right side (semi-diagrammatic); I, genital styles.

eye and base of tegmen, lateral lobes acutely rounded; mesonotum in middle line not quite twice as long as pronotum, median carina and lateral carinae strongly developed, surface wrinkled; post-tibiae with three spines laterally, five apically, basal metatarsal segment with five teeth apically, second segment also with five teeth. Tegmina broader than long, costal margin almost straight, apical margin sinuate, longer than costal margin, costal vein, Sc + R, Cu and claval vein prominent, subfoliate, M weak but distinct, surface coarsely reticulate. Wings absent. Abdomen broad, each tergum with a median carina and two carinae, parallel to median carina, on each side.

Vertex, pronotum and mesonotum light reddish brown, carinae ochraceous; legs yellowish brown, tarsi ochraceous. Tegmina yellowish brown, all veins and veinlets ochraceous, abdomen dark fuscous, dorsally diffusely marked with tawny yellow. Frons dark fuscous, clypeus dark tawny, tinged with fuscous.

Anal segment of male extremely short, much broader than long, completely overlapped by eighth tergum, lateroapical angles each moderately produced caudad in a short bluntly conical lobe. Pygofer extremely short, reduced to a narrow band, inflected mesad, bordering genital foramen. Aedeagus large; suspensorium comprising two long flattened limbs, each twisted into a triangular lobe near dorsal point of attachment, each lobe excavate in a deep convolution for accommodation of apex of aedeagus when folded; aedeagus I-shaped in section; dorsal margin comprising a symmetrical pair of sinuate sclerites each abruptly tapering to a slender curved spine apically; ventral margin comprising a broad sclerotised plate, in ventral view with convex margins, distally extending dorsad in two flattened limbs that are dilated and spatuliform apically; a long curved spinose process emerging on right side of aedeagus near middle, curved laterad, cephalad, and finally mesad. Genital styles rather broad, with ventral margins closely apposed, and shorter than dorsal margins; dorsal margins convex, apical margins oblique; the two styles jointly forming a shallowly convex rounded dish-like operculum for remainder of genitalia.

Male: length, 3.5 mm.

Holotype male, South Africa, Pondoland, Port St. John's 15-31.viii.1923 (*R. E. Turner*) Brit. Mus. 1923-463, in B.M. (N.H.).

This species is readily distinguishable from all others by the shape of the head, which, though longer, is rather similar to that in the Tettigometrid *Raatzbrockmannia.* The shape of the aedeagus is distinctive. The organ is bilaterally symmetrical except for the long flexibly-attached spinose process on the right side. It is just possible that a similar process may, in other specimens, prove to be present on the left side, but close examination of the aedeagus of the type specimen failed to reveal any indication that such a process might have been present initially but had since become detached.

Strongylodemas Stål

Stål, 1853, *Öfv. Svenska Vet. Akad. Förh.*, 10: 265. Haplotype, *Strongylodemas circulare* Stål.

Strongylodemas circulare Stål

Stål, 1855, *Öfv. Svenska Vet. Akad. Förh.*, 12: 92.

Rostrum surpassing post-trochanters, subapical segment about 1.5 times as long as apical. Post-tibiae with four spines laterally, seven apically, basal metatarsal segment with twelve teeth apically, second segment with eleven teeth.

This supplementary description is based on a specimen in the Naturhistoriska Riksmuseum, Stockholm, labelled "*Strongylodemas circulare* Stål. Type."

Strongylodemas retarius sp.n. Text-fig. 13, A-G

General body form broadly oval; vertex broader than long in middle (1.6 : 1), posterior margin transverse, lateral margins slightly converging distad between eyes, apical margin convex, a narrow groove present medially in place of median carina, disc not depressed, coarsely punctate; frons longer at sides than broad at widest part (nearly 1.1 : 1), basal margin shallowly convex, lateral margins uniting with median carina basally, sinuately diverging to below level of antennae, then incurved, disc punctate, median carina percurrent, sublateral carinae sinuate, clypeus narrower than frons, shallowly convex, weakly carinate medially, lora curved, moderately expanded distally; rostrum surpassing post-trochanters by half its length, antennae with second segment subglobose, ocelli absent, eyes not callussed behind; pronotum with anterior margin concave behind eyes, shallowly convex on disc, and distinctly incised at middle, disc carinate medially and laterally, lateral carinae closely following hind margin of eyes, a single carina at lateral margin between eye and base of tegmen, posterior margin of pronotum shallowly sinuate, concave at middle, ventrolateral lobes large, with lateral margin obtusely rounding into ventral margin; mesonotum broader than long (2.6 : 1), very narrow laterally, distinctly medially carinate except on scutellum, post-tibiae with three spines laterally, eight apically, basal metatarsal segment with ten teeth apically, second segment with eleven teeth; tegmina subquadrate, costal margin slightly longer than apical margin, which it meets almost rectangularly, apical margin shallowly convex, slightly oblique, longer than commissural margin, costal vein straight, submarginal, Sc + R straight, distinct to apical margin, remaining veins rather irregular and obscured by a reticulum of supernumerary veinlets; abdominal terga densely shallowly punctate, medially carinate, with a fine groove along mid-line of carina of third and fourth segments.

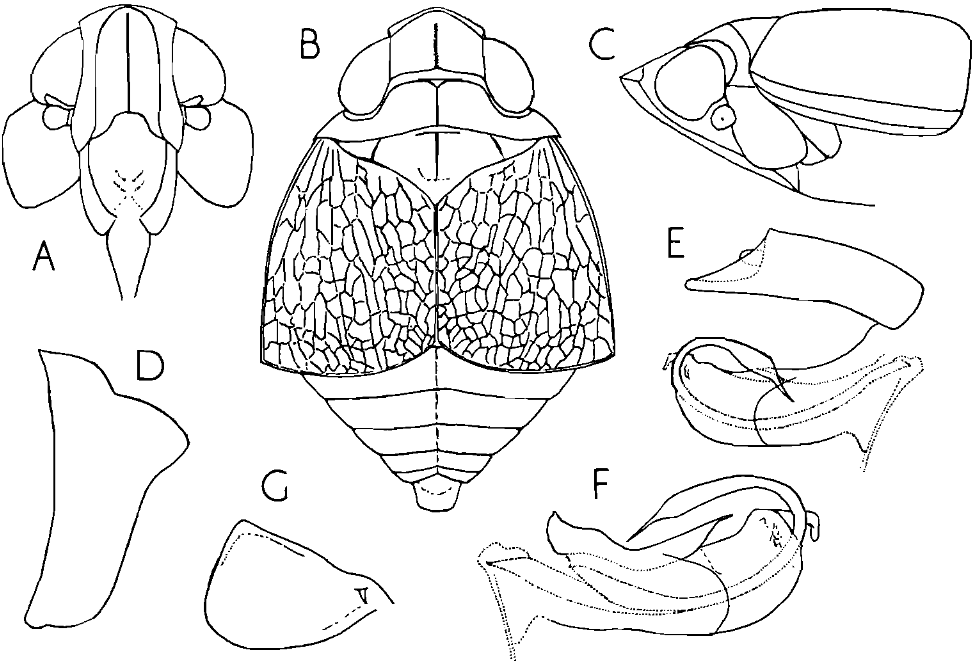

Fig. 13. *Strongylodemas retarius* sp. n. A, Frons, clypeus, and lateral lobes of pronotum; B, dorsal surface of body; C, head, thorax and tegmen; D, pygofer, left side; E, anal segment of male and aedeagus, right side; F, aedeagus, left side (more enlarged than in E); G, right genital style.

Anal segment of male tubular, slightly more than twice as long as broad, slightly deflexed distally, anal foramen situated in distal half. Pygofer rather short, dorsolateral angles each produced caudad in an acutely rounded lobe. Aedeagus moderately long, broadly tubular, weakly curved upward distad, a pair of long narrowly tubular processes emerging at apex, reflected cephalad above aedeagus almost to its base, each abruptly narrowed distally into a slender straight spinose process. Genital styles in side view broadly subtriangular, dorsal margin almost straight, dorso-apical angle bluntly rectangular, apical margin feebly sinuate, ventral margin rather strongly convex; a small sclerotised narrowly triangular process on inner surface of style dorsally near base.

Yellowish-brown; frons and dorsal surface of body orange-brown; second antennal segment basally, a suffusion across lateral lobes of pronotum, a small callus on pronotum behind eye, mesoscutellum, margins of pleurites, coxae and femora, two transverse bands on each of femora and tibiae of fore and middle legs, hind legs almost entirely, tawny yellow to stramineous; apical segment of rostrum distally and post-tibial spines, black; tegmina fuscous, venation light yellowish-brown, sometimes a small spot at middle of M, creamy yellow.

Male, length, 3.6 mm. Female, length, 5.2 mm.

Holotype ♂, South Africa, Johannesburg, Bedford Ridge, 26.xii.1948. (*A. L. Capener*) Brit. Mus. 1952-254 in B.M. (N.H.). Allotype ♀, same locality, 17.i.42 (*A. L. Capener*).

This species can be distinguished from *S. circulare* Stål and *S. breviceps* Fennah by the relatively shorter vertex and the presence of a median groove on the vertex instead of a median carina; it also differs in the proportions of the frons and in the strongly reticulate tegminal venation. From *S. circulare* it differs in the structure of the male genitalia.

Capenopsis Melichar

Melichar, 1912, *Abh. zool. bot. Ges. Wien* 7(1): 181. Orthotype, *Capenopsis horvathi* Mel.

Capenopsis horvathi Melichar

Melichar, 1912, *Abh. zool. bot. Ges. Wien* 7(1): 182.

2 ♂, South Africa, south-west Cape, west of van Rhynsdorp, Strandfontein Coast, 15-17.x.1964 (*B. & P. Stuckenberg*).

In this population the cephalic process is relatively longer and more slender than in that from Van Rhyn's Pass (Fennah 1962: 243), but, apart from this, the two populations are similar.

Capenopsis minos Fennah. Text-fig. 14, A-C

Fennah, 1962, *Ann. Natal Mus.* 15: 243.

1 ♀, South Africa, Cape Province, Prince Albert Rd., xl.1931 (*R. E. Turner*) Brit. Mus. 1931-564.

It is now possible to figure the cephalic process, which is distinctly more slender than in *C. horvathi* Melichar.

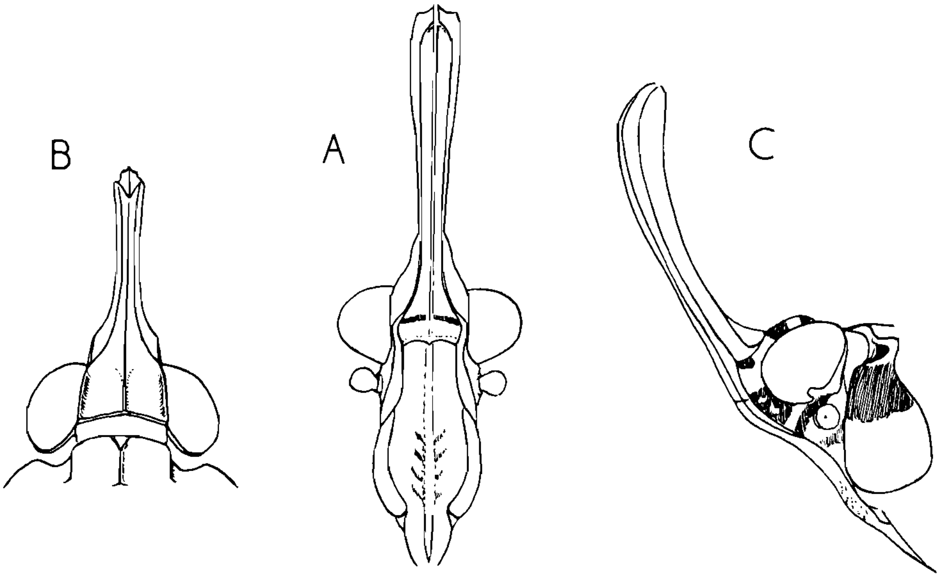

Fig. 14. *Capenopsis minos* Fennah. A, Frons and clypeus; B, vertex and anterior margin of pronotum; C, head and pronotum, lateral view.

Capenopsis socrates sp.n. Text-fig. 15, A-F

Vertex longer than broad (4.5 : 1), upcurved in distal half, posterior margin transverse, lateral margins foliate, gradually converging distally, median carina present basad of anterior margin of eyes, disc moderately hollowed out; frons narrow and parallel sided in basal three fifths, expanding and with sinuate margins in apical two fifths, median carina and sublateral carinae distinct throughout, latter slightly convergent in distal two fifths, no transverse callus developed at frontoclypeal suture, clypeus transversely convex, weakly convex in profile, narrower at widest part than frons, lateral marginal lobes not as wide as lateral portions of frons, widening a little distally, clypeus medially carinate, rostrum surpassing post-trochanters with subapical segment longer than apical segment (1.8 : 1), ocelli absent, eyes subovoid, distinctly callussed on their posterior margin, antennae with basal segment short, ring-like, second segment subglobose, slightly compressed. Pronotum broader than head with eyes, anterior margin transverse, hollowed behind eyes, carinae prominent, subparallel, subfoliately raised, median carinae forked before basal margin, lateral discal carinae attaining hind margin, a pair of carinae at each lateral margin, between eye and base of tegmen, the upper more strongly developed than the lower, ventrolateral lobes broad, trapezoidal, longitudinally impressed near middle; mesonotum broader than long (1.7 : 1), tricarinate, with median carina subfoliately elevated, lateral carinae moderately diverging caudad; tegmina longer than broad (not quite 1.2 : 1), not covering second visible segment of abdomen, venation simple, prominent, transverse veinlets absent, costal, apical and commissural margins weakly convex, anal angle obtusely rounded; procoxae broad with ventrolateral angle acutely produced, femora and tibiae of fore and middle legs compressed and slightly foliately expanded, post-tibiae with four spines laterally, seven apically, basal metatarsal segment with seven teeth apically, second metatarsal segment also with seven; abdomen broad, abdominal terga medially carinate, a distinct row of oblique linear elevations on each side of middle line, and a row on each side near lateral margins, and parallel to margin.

Light brownish pink; a band across ventrolateral lobes of pronotum continuing on to meso- and metapleura, creamy yellow, covered with white secretion on pronotum; sublateral carinae of frons basally and margins of vertex apically, and posterior margin of pronotum, suffused or marbled fuscous; an oblique line above eyes, a small wedge-shaped mark above antennae, a spot on posterior margin of abdominal tergites at apex of each longitudinal elevation, black. Tegmina dull yellowish brown, areas between Sc + R and Cu and PCu and commissural margin suffused with greyish fuscous.

Anal segment of male rather short, in side view with ventral margin produced ventrad at middle in an obtusely angulate lobe. Pygofer rather short in side view with dorsolateral angles produced caudad in a rounded lobe, lateral margins oblique. Aedeagus moderately long and narrow, tubular, shallowly curved upward distad, a pair of partly membranous spinose processes emerging at apex, directed caudad, then abruptly reflected cephalad above aedeagus and extending cephalad not quite to middle, the reflected portion pigmented

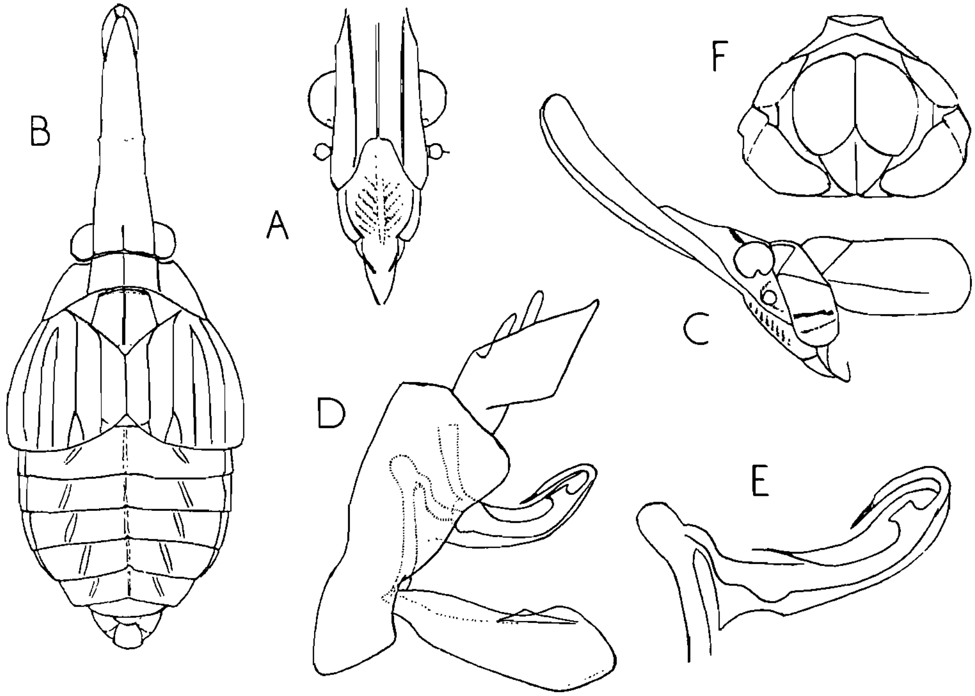

Fig. 15. *Capenopsis socrates* sp. n. A, Clypeus and basal part of frons; B, dorsal surface of body; C, head, thorax and tegmen, lateral view; D, male genitalia, left side; E, aedeagus, left side; F, female genitalia, posterior view.

Genital styles relatively long and narrow, ventral margin feebly convex, almost straight, strongly rounding distally into oblique apical margin; dorsal margin sinuate, shallowly concave in basal half, a broad ledge-like process emerging submarginally at middle, directed laterad, decurved and acuminate apically.
Male, length, 7.0 mm. Female, length, 9.0 mm.

Holotype ♂, South-west Cape, Knersvlakte, north of van Rhynsdorp, 6-9.x.1964 (*B. & P. Stuckenberg*), in Natal Museum. 2 ♂, 2 ♀, same data.

This species differs abundantly from *C. horvathi* and *C. minos* in the shape of the head, pronotum, mesonotum and tegmina.

Codon Fennah

Fennah, 1962, *Ann. Natal Mus.* 15: 237. Orthotype, *Codon praestana* Fennah *loc. cit.*: 238.

Codon adrastus sp.n. Text-fig. 16, A-F

Vertex subturbinate, markedly longer in middle line than broad across base (1.7 : 1), projecting before eyes for slightly less than half its length, basal margin shallowly concave, lateral margins weakly converging distad to a little beyond level of anterior margin of eyes, then more strongly converging to meet at an angle of 67° at apex, sides of head distinctly visible from above. Frons in middle line longer than wide at level of junction with clypeus laterally, basal margin acutely convex, distance between median carina and sublateral carinae about equal to that between latter and lateral margin and a very little wider than width of lora. Profemora with a single, moderately stout spine on lower margin in distal half; post-tibiae with four small spines laterally, and eight rather stout spines apically; basal metatarsal segment with two spines and 13 scale-bearing teeth, second segment with two spines and 14 scale-bearing teeth. Tegmina brachypterous, with apical angle subrectangularly rounded, anal angle more broadly rounded, twelve almost regular straight parallel longitudinal veins extending from basal margin to apical margin, the outer veins connected by weak transverse veinlets. Wings vestigial.

Anal segment of male moderately long, lateral margins in side view shallowly convex; apical margin convex; anal style short. Pygofer rather short, dorsolateral angles each strongly produced caudad in an acutely angulate lobe. Aedeagus moderately long, its distal portion reflected cephalad in repose; phallobase with a pair of shallowly sinuate submembranous lobes arising at base of distal membranous sac-like portion of phallobase, directed dorsocephalad, apically acute; a pair of narrow phallic appendages emerging apically, recurved laterocephalad, each acuminate distally. Genital styles in side view subrhomboidal, with ventral margin shallowly convex, apical margin strongly oblique, and dorsal margin feebly sinuate.

Ninth tergum of female distinctly tumid on each side. Lateral plates of eighth sternite each with posteromedian angle strongly produced mesad in a rather narrow lobe, the two lobes overlapping in middle line. Ovipositor with third valvulae rounded-triangular, stout, convex near dorsal margin, otherwise almost flat. Anal segment broader than long, tubular, lateral margins parallel.

Stramineous; a suffusion on disc of clypeus, pink; two spots on third abdominal tergum and a suffusion medially on fifth tergum, brown; apical segment of rostrum, spines on legs and tarsi distally, black.

Male, length, 3.8 mm. Female, length, 4.4 mm.

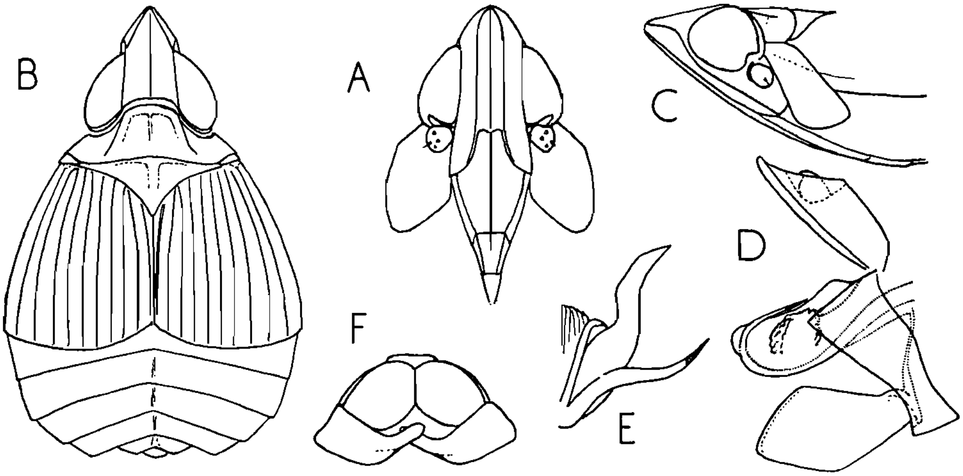

Fig. 16. *Codon adrastus* sp. n. A, Frons, clypeus, and lateral lobes of pronotum; B, dorsal surface of body; C, head and thorax, lateral view; D, anal segment of male, pygofer, aedeagus, and genital style, right side; E, right side of aedeagus, posterior view (semidiagrammatic, with processes displaced laterad); F, female genitalia, ventral view.

Holotype ♂ S.W. Africa, Aus., XII.1929 (*R. E. Turner*) Brit. Mus. 1930-113, in B.M. (N.H.).

Allotype ♀, S.W. Africa, Aus., 8-30.XI.1929 (*R. E. Turner*), B.M. 1930-113.

This species is readily separable from *C. praestana* Fenn., the only other species in the genus, by its relatively longer vertex, twelve-veined tegmina, and coloration.

Tecmar Fennah

Fennah, 1962, *Ann. Natal Mus.* 15: 235. Orthotype, *Tecmar pausanias* Fennah.

Tecmar pausanias Fennah

Fennah, 1962, *op. cit.*: 236.

South Africa, south-west Cape Province: Calvinia District, 14.X.1964, 2 ♂ (*B. & P. Stuckenberg*); north of van Rhynsdorp, Knersvlakte, 6-9.X.1964, 4 ♂ 1 ♀ (*B. & P. Stuckenberg*).

Menenches Fennah

Fennah, 1962, *Ann. Natal Mus.* 15: 220. Orthotype, *Menenches nona* Fennah *op. cit.*: 221.

The gender of this generic name is masculine.

Menenches morta Fennah

Fennah, 1962, *op. cit.*: 224.

Basutoland, Maseru District, Maloti Mts.: Makhaleng Valley, Blue Mountain Pass, 2, 150-2, 525 m, 12-14.I.1963, 3 ♂, 3 ♀; Bushman's Pass, 2, 125-2, 250 m, 8-14.I.1963, 3♂, 3 ♀ (*B. & P. Stuckenberg*).

Menenches imbrex Fennah

Fennah, 1962, *op. cit.*: 226.

Basutoland, Maseru District, Maloti Mts., Makhaleng Valley, Blue Mountain Pass, 2, 150-2, 525 m, 12-14.I.1963, 1 ♀ (*B. & P. Stuckenberg*).

Menenches atropos sp.n. Text-fig. 17, A-C

Vertex longer in middle line than broad (2.5—2.6 : 1), produced before eyes for length of an eye or slightly more; frons in profile strongly concave. Tegmina with apical margin shallowly convex, apical angle rounded.

Piceous; frons medially, white; vertex, frons marginally, sides of head above antennae, a narrow band transversely across clypeus, a suffusion on disc of pronotum, some spots laterad of disc, an oblique band across ventrolateral lobes, a suffusion in each compartment of disc of mesonotum, lateral angles and mesoscutellum, legs marginally, five to nine longitudinal lines on each of last three abdominal segments, dull yellowish-brown, sometimes lighter on head. Tegmina piceous, dendroid pattern dull yellowish brown or reddish-brown.

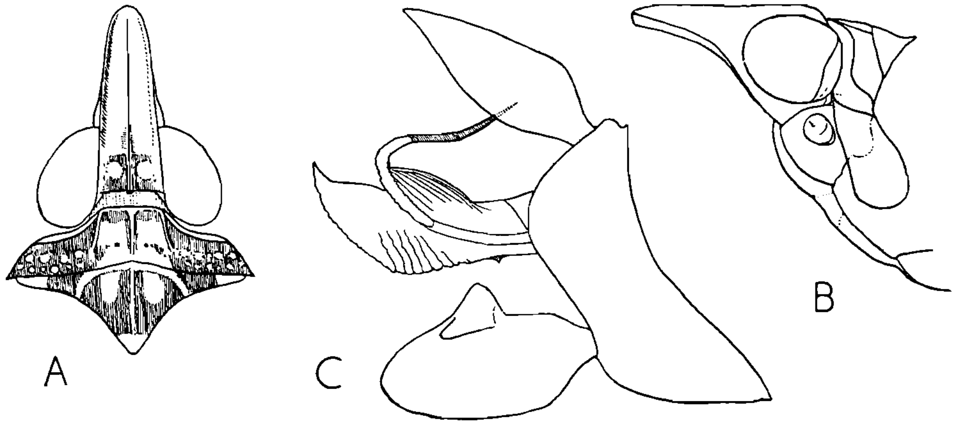

Fig. 17. *Menenches atropcs* sp. n. A, Vertex, pronotum and mesonotum; B, head, pronotum and mesonotum, lateral view; C, male genitalia, right side.

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Anal segment of male rather short, in dorsal view about twice as long as broad, widest at middle, apical margin shallowly convex; in lateral view rather narrow, with dorsal margin feebly sinuate and ventral margin almost straight in basal half and curved dorsad in distal half. Pygofer moderately long, in side view with posterior margin weakly sinuate, slightly oblique, broadly convex in upper half. Aedeagus moderately long, phallobase in side view, when not inflated, with dorsal margin almost straight, ventral margin convex, a short triangular process ventrolaterally in basal quarter, phallic appendages rather narrowly tubular, emerging subapically and reflected cephalad above aedeagus, reaching almost to its base, membranous for about half of exposed length, sclerotised and pigmented distally, weakly bent upward before apex, acuminate. Genital styles in side view subovate, with dorsal margin produced dorsad at middle in a bluntly subtriangular lobe with a broad rounded process, directed ventrocaudad, on its outer face.

Male, length, 4.9 mm. Female, length, 5.1 mm.

Holotype ♂, South Africa, East Cape Province, Barkly East District, Naudes Nek, 2,350-2,525 m, eastern slopes, 19.i.1963.

2 ♂, 1 ♀, same data. East Cape Province, Barkly East District, Lundeans Nek, 1,925-2,100 m, 18.i.1963 (*B. & P. Stuckenberg*).

This species differs from *M. nona* in having the frons concave in profile and the apical angle of the tegmina rounded, not angulate. In the male genitalia it differs in the sclerotised portions of the phallic appendages being bent upward distally, and in the lateral process of the genital styles being more stout than in *M. nona*; furthermore the extensible aedeagal membranous lobes terminate in a point in *M.atropos* but are obliquely truncate, and not pointed, in *M. nona.* From *M. morta*, this species differs in both sexes in the more strongly sinuate lateral margins of the frons, which are concave before the eyes then curve outwards rather abruptly near the frontoclypeal suture; in the male, in the shape of the aedeagal appendages and in the female, in the distinctly more slender appearance of the apposed basal portions of the first valvulae of the ovipositor.

The mutilated female specimen from the Drege collection mentioned earlier by the writer (Fennah, 1962, Ann. Natal Mus. 15: 226) belongs to *M. atropos.*

Mahanorona Distant

Distant, 1909, *Ann. Mag. nat. Hist.* (8)4: 80. Haplotype, *Mahanorona cowani* Distant.

Mahanorona cowani Distant

Distant 1909, *op. cit.*: 81.

The type specimen has 4 or 5 spines laterally on the post-tibiae and seven apically; the basal segment of the hind tarsus has seven spines, and the second segment has five. The female genitalia, as visible externally, are similar to those found in Dictyopharidae and Achilidae, and the general bodily features resemble those found in members of the former family. *Mahanorona* is accordingly now transferred to the Dictyopharidae.

Family *TROPIDUCHIDAE* Stål

A number of Tropiduchid genera were assigned by their authors to the family Issidae. Some of them, including *Pseudogergithus*, *Lagoana* and *Bananellodes*, have already been transferred to Tropiduchidae, and the following are now removed from Issidae and placed here: *Camerunilla*, *Eucameruna*, *Durium*, *Heinsenia*, *Obedas*, *Gergithomorphus* and *Spathocranus*.

Turneriola China

China, 1923, *Entomologist* **56**: 81. Orthotype, *Turneriola rowlandi* China *op. cit.*: 82.

Turneriola sp.

South west Cape Province, Calvinia District, Nieuwoudtville area, 14.x.64, 2 ♀ (*B. & P. Stuckenberg*).

These females resemble those of *T. hirsuta* Muir, but the vertex, anal segment and third valvulae are relatively shorter than in the typical population of *T. hirsuta* from Mossel Bay.

Durium Stål

Stål, 1861, *Öfv. Svenska Vet. Akad. Förh.* **18**: 209. Logotype, *Acrometopus punctipes* Signoret, 1860, Ann. Soc. ent. Fr. (3)8: 202.

Durium caffrum Stål

Stål, 1866, *Hemiptera Africana* **4**: 206.

South Africa, Port St. John's, 20-25.XI.1961, 2 ♀ (*B. & P. Stuckenberg*).

Caffrommatissus gen.n.

Vertex horizontal, not quite twice as broad at base of middle line as long, basal margin concave, lateral margins converging distad, apical margin obtusely angulate, disc ecarinate; frons longer than broad, widest at level of eyes, basal margin straight or weakly convex, lateral margins convex, frontoclypeal suture transverse; disc tricarinate, in profile moderately convex; clypeus less than two thirds of length of frons, postclypeal portion broader than long, rather obscurely tricarinate, rostrum extremely short, not attaining mesotrochanters, apical segment broader than long, subapical segment only a little longer than apical; antennae with basal segment very short, ring-like, second segment about as long as wide at apex, widening distally, truncate at apex, ocelli minute, eyes reniform, shallowly excavate below. Pronotum not as long as vertex, anterior margin of disc convex, posterior margin concave, disc strongly tricarinate, a thick carina at each lateral margin between eye and tegula; mesonotum longer than vertex and pronotum combined, tricarinate, with lateral discal carinae convex; legs relatively short, post-tibiae with one spine laterally, eleven apically, basal metatarsal segment with eight teeth apically, second segment with two teeth; tegmina tectiform, more than 2.5 times as long as broad, costal margin slightly convex, apical margin deeply and evenly rounded, commissural margin straight, C, Sc + R and M simple, Cu1 forked in basal third, claval suture distinct, claval veins uniting basad of middle of clavus, apex of clavus distad of middle of tegmen; wings not quite as long as tegmina, Sc + R and M simple to apex.

Anal segment of male moderately long, anal foramen near middle. Pygofer rather long. Genital styles relatively large, broad, with a narrow process on inner surface a little below dorsal margin.

Type species, *Caffrommatissus trimaculatus* sp.n.

This genus is readily distinguishable from all others by the number of spines and teeth on the post-tibiae and tarsi. Its affinities evidently lie with *Ommatissus*, and more remotely with *Stenoconchyoptera* and *Turneriola*.

Caffrommatissus trimaculatus sp.n. Text-fig. 18, A-F

Vertex broader at base of middle line than long in middle (1.8 : 1), disc hollowed, frons longer in middle line than broad at widest part (1.3 : 1); clypeus with a knob-like callus medially at apex of post-clypeal portion, a callus across gena below antennae at level of frontoclypeal suture. Pronotum not quite as long as vertex in middle line; mesonotum with median disc longer than broad (1.7 : 1). Tegmina coelopterous.

Stramineous or light yellowish brown; carinae of frons, clypeus distally, a dilute suffusion on disc of vertex, a darker suffusion on each side of median carina of pronotum

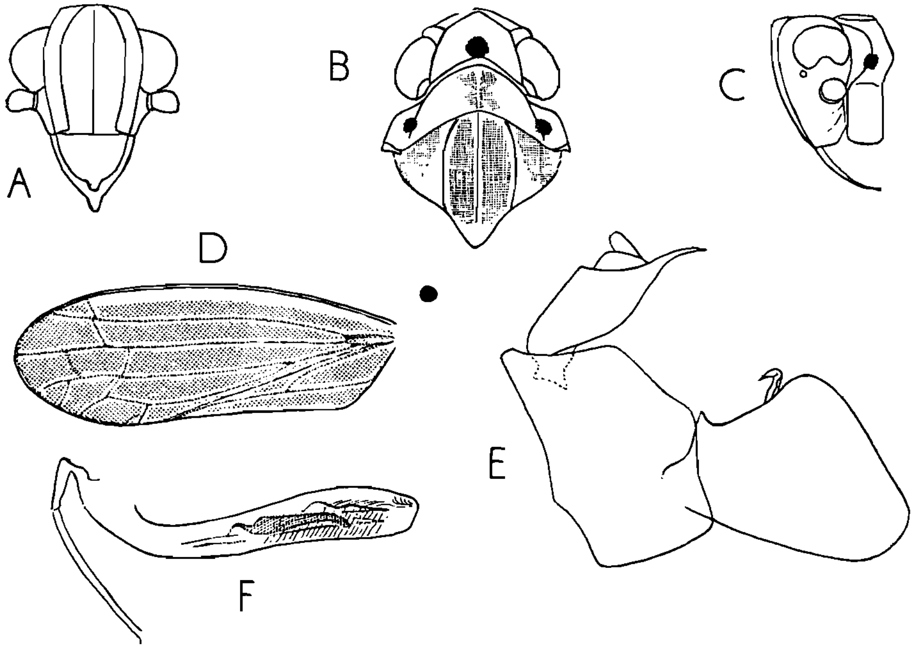

Fig. 18. *Caffrommatissus trimaculatus* sp. n. A, Frons and clypeus; B, vertex, pronotum and mesonotum; C, head and pronotum, lateral view; D, tegmen; E, anal segment of male, pygofer and genital style, left side; F, aedeagus, left side, structures inside visible by transparency.

and of mesonotum, and near lateral margins of mesonotum, reddish brown; a round spot at base of vertex in middle line, and a round spot on each side of pronotum behind eye, and post-tibial spines and post-tarsal teeth, black. Tegmina yellowish-brown, costal margin and longitudinal veins except PCu overlain stramineous. Wings hyaline, powdered white, anterior veins yellowish-brown, darker apically.

Anal segment of male rather short, cylindrical, apical margin produced ventrocaudad medially in a short spinose process. Pygofer rather long, in side view with lateral margins sinuately convex. Aedeagus long, tubular but with ventral surface flattened distally, in repose gradually expanding to distal third, truncate apically; internally, near right side, three spinose rods directed caudad, two of them slender, subequal, porrect and little pigmented, the third rather stouter, shorter than the other two, decurved apically and more strongly pigmented. Genital styles relatively large, trapezoidal, in side view with ventral margin straight, distally strongly rounding into apical margin, which is oblique; a weak sub-marginal ridge, parallel to apical margin, on inner surface of style, expanded dorsally into a lenticular flange that extends mesad; dorsal margin of genital style shallowly concave, a short spinose process near middle, directed dorsad and recurved lateroventrad, widest at its middle.

Male, length, 4.0 mm; tegmen, 3.8 mm. Female (coelopterous), length, 3.6 mm; tegmen, 3.6 mm (brachypterous), length, 4.1 mm.

Holotype ♂, South Africa, Cape Province, Swellendam, ii,1932 (*R. E. Turner*) Brit. Mus. 1932-145, in B.M. (N.H.).

2 ♀♀, same data. 3 ♀♀ (brachypterous), Pretoria, Wonderboom, 27.xii.45 (*A. L. Capener*).

The only species with which the present can reasonably be compared are those of *Ommatissus*. If the generic characters are ignored, *C. trimaculatus* differs from them all in the pattern of spots on the head, the absence of a median carina on the vertex, and the form of the aedeagus and genital styles.

Family *ISSIDAE* Spinola

Caliscelis de Laporte

de Laporte, 1833, *Ann. Soc. ent. France* **1**: 251. Haplotype, *Fulgora bonellii* Latreille 1807, Genera Crustaceorum et Insectorum **3**: 166.

Caliscelis nero sp.n. Text-fig. 19, A-K

Vertex hexagonal, weakly declivous, broader than long (2 : 1 in male, 2.4 : 1 in female), disc slightly depressed, ecarinate or median carina feeble; frons in middle line in male as long as broad at widest part, in female wider than long in middle (about 1.3 : 1), lateral margins convex, sinuately so in male, greatest width at level of eyes, median and sublateral carinae distinct, sublateral carinae diverging distad, sometimes weak in male, attaining frontoclypeal suture, in male, disc depressed on each side of median carina, pustulate near lateral margin in basal half; post-clypeus ecarinate, anteclypeus with a broad median ridge; rostrum attaining post-coxae, almost vertical, apical segment about as broad as long, subapical segment three times as long as apical; ocelli absent, antennae with basal segment short, second segment globose, third segment situated apically. Pronotum as long as vertex, median carina weak; mesonotum twice as long as pronotum, median portion of disc depressed, lateral carinae distinct, median carina weak or absent, two supernumerary carinae on each side outside lateral carinae of disc in female, femora and tibiae of fore and middle legs laterally compressed, lower margins of femora foliately expanded, anterior margins of tibiae foliaceous, less so in mesotibiae than in protibiae; post-tibiae with one spine laterally, six apically, in female a foliaceous ridge extending from base to apex. Tegmina in side view with dorsal margin weakly hollowed in male, straight in female, venation indistinct.

Male black or dark fuscous; lateral pustules and margins on frons and vertex tawny or light yellowish brown, pronotum, except at anterior margin and immediately below eyes, first visible abdominal segment, except at anterior margin, about six longitudinal spots on tergites of following two segments, and posterolateral angles of fifth to eighth tergites, creamy white. Tegmina with three longitudinal veins and an oblique fascia from Sc + R at middle to near anal angle, creamy white. Female light yellowish-brown, almost uniformly

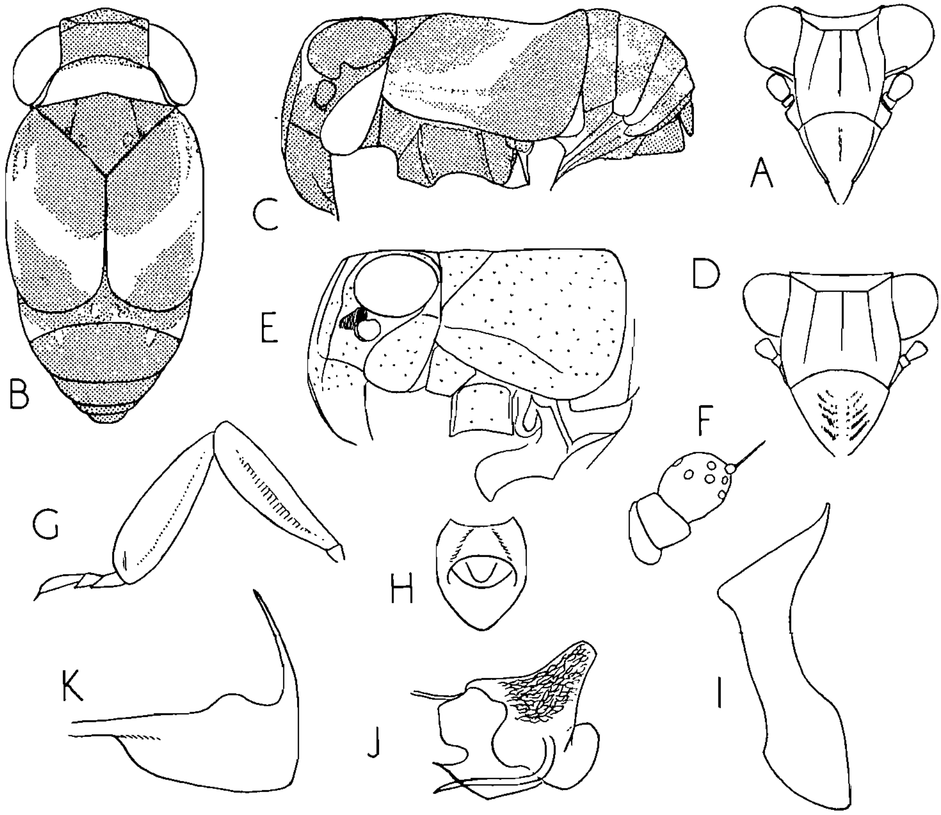

Fig. 19. *Caliscelis nero* sp. n. A, Frons and clypeus (male); B, dorsal surface of body (male); C, head, thorax, tegmen and abdomen (male); D, frons and clypeus (female); E, head, thorax and tegmen (female); F, antenna; G, foreleg (male); H, anal segment of male, dorsal view; I, pygofer, right side; J, aedeagus; K, genital style.

speckled with fuscous spots, genae near antennae and antennae, fuscous. Tegmina of same colour as body.

Anal segment of male, short, about as broad as long, ring-like, apical margin in dorsal view strongly convex. Pygofer rather short, longer ventrally than dorsally, dorsolateral angles each slightly produced caudad in a rectangulately-rounded lobe; lateral margins in side view weakly sinuate. Aedeagus very short, bilaterally symmetrical, broadly tubular, dorsal margin in side view shallowly concave, a pair of steeply tectiform subtriangular lobes, with a reticulate surface, extending ventrad; ventral surface of aedeagus in side view convex, apical margin strongly rounded; a pair of moderately long spinose processes emerging latero-ventrally at one third from apex, directed cephalad below aedeagus. Genital styles rather long, in profile expanding distad, ventral margin shallowly convex, apical margin almost straight, and slightly oblique, dorsal margin straight in basal half, produced dorsad in a shallow lobe at three quarters from base; dorsal apical angle strongly produced vertically and slightly mesally in a slender spinose process.

Male, length, 2.8 mm. Female, length, 3.9 mm.

Holotype ♂, South Africa, Rustenburg, iii.1947 (*A. L. Capener*) in B.M. (N.H.). 2 ♂, same data; 1 ♀, Johannesburg, Bedford Ridge, 29.xii.1948 (*A. L. Capener*), 1 ♀, Pretoria Dist. Blue Hills, 7.iv.1948 (*A. L. Capener*).

This species differs from *C. bonellii*, *C. affinis* and *C. eximia* in the shape of the head, structure of the legs and, in the male, in the more strongly sellate tegmina,

Asarcopus Horvath

Horvath, 1921, *Bull. Soc. Hist. Nat. Afrique du Nord* 12: 179. Haplotype, *Asarcopus palmarum* Horvath, 1921, *loc. cit.*

Asarcopus phaedo sp.n. Text-fig. 20, A-C, F, G

Vertex declivous, broader than long in middle line (slightly more than 2.2 : 1), basal margin weakly angulately concave, lateral margins subparallel, anterior margin convex, transverse in middle third, a weak Y-shaped carina present, with arms diverging at approximately 120°; frons about 2.5 times as broad as long in middle, almost as wide at base as at widest part, which is just above level of antennae, lateral margins shallowly convex, disc transversely rugulose, two carinae arising basally at one third of width from lateral margin, diverging distad then abruptly incurved near distal margin to meet one another, and median carina of clypeus, in a central umbo; frontoclypeal suture obscure, indicated by a change in texture of surface; clypeus triangular, convex, strongly medially carinate, rostrum attaining post-coxae but not post-trochanters, apical segment about as broad as long, slightly more than a quarter of length of subapical segment. Post-tibiae with one spine laterally, five apically.

Dark castaneous-fuscous; three pustules just laterad of each submedian carina of frons, Y-shaped carina and posterior angles of vertex, a pair of pustules anterolaterally on pronotal disc, lateral carinae of mesonotum and posterior margin of disc testaceous, anteclypeal portion of clypeus more or less reddish-brown; labrum, procoxae, mesocoxae, lower margin of mesopleura, tibiae distally and post-femora dorsally, dull creamy white.

Pregenital sternite of female with middle part moderately produced caudad in a broad

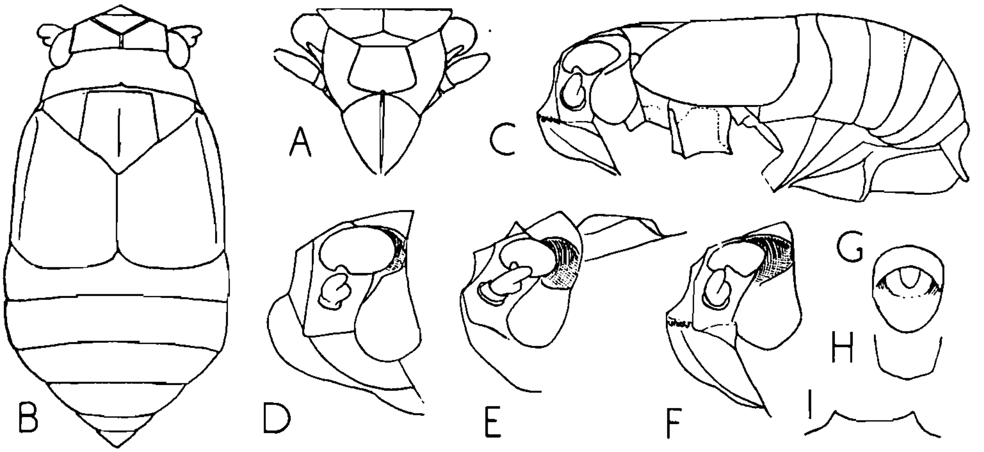

Fig. 20. *Asarcopus phaedo* sp. n. A, Frons and clypeus; B, dorsal surface of body; C, head, thorax, tegmen and abdomen, lateral view; F, head and pronotum, lateral view; G, anal segment of female (dorsal view); I, posterior margin of pregenital sternite;
Asarcopus palmarum Horvath. D, Head and pronotum, lateral view.
Asarcopus euthyphro Fennah. E, Head, pronotum and mesonotum, lateral view, H, posterior margin of anal segment of female.

lobe with its lateral angles acute and the margin between them shallowly excavate.

Female, length, 3.0 mm.

Holotype ♀, South West Africa, Otavifontein, 30.xii.1933 (*J. Ogilvie*) B.M. 1934-142, in B.M. (N.H.).

This species differs from *A. palmarum* Horv. (fig. 20, D) in its relatively shorter vertex and in the shape of the posterior margin of the pregenital sternite of the female and from this species and *A. euthyphro* Fenn. (fig. 20, E, H,) in the profile of the head, and from *A. euthyphro* in the shape of the anal segment of the female.

Griphissus gen.n.

Form elongate ovoid. Vertex, pronotum and mesonotum medially ecarinate. Vertex rather more than twice as broad as long, with posterior margin shallowly concave, lateral margins between eyes straight, not elevated, vertex distally merged with frons, which is abundantly visible from above; frons convex transversely, and in profile medially ecarinate, lateral margins near eyes rather weakly carinate, a little obscure distad of eyes, clypeus not produced anteriorly farther than frons, rostrum not quite attaining post-trochanters, subapical segment about three times as long as apical, latter broader than long, antennae with basal segment short, ring-like, second segment long, third segment inserted dorsally one third from base, portion of second segment distad of this level narrowly cylindrical, bluntly rounded at apex, ocelli absent, eyes very narrowly ovoid, acutely so posteriorly. Pronotum at least half as long as mesonotum, completely overlapped by eyes laterally, anterior margin convex, posterior margin transverse or weakly concave, ventrolateral lobes facing laterally; mesonotum twice as broad as long; profemora and protibiae distinctly longer than corresponding coxae, protibiae and mesotibiae stout, compressed, post-tibiae armed with one spine laterally and six apically.

Type species, *Griphissus xenocles* sp.n.

This genus differs from *Caliscelis*, *Populonia*, *Issopulex* and *Afronaso* in the form of the antennae, and from *Ugandana* in the structure of the head and in bodily size. The generic name is of masculine gender.

Griphissus xenocles sp.n. Text-fig. 21, A-J

Head, pronotum and mesonotum with long sparse setae. Vertex with posterior margin transverse, very feebly concave at middle, slightly elevated above level of pronotum, about level with middle of eyes, broadly impressed on each side of middle line, declivous, in male polished and passing imperceptibly into frons, in female dull with lateral margins curving mesad distad of eyes and uniting with finely carinate shallowly concave apical margin; frons widest at base, where it is as broad as long in middle line, in profile decurved at apex, polished in male, transversely rugulose in female, lateral margins distinctly carinate near antennae, in dorsal view converging to narrowly rounded apex of head; frontoclypeal suture in anterior view transverse or shallowly concave, much recessed below overhanging apex of frons; clypeus triangular, transversely convex, ecarinate, smooth. Pronotum shorter than vertex (1 : 1.3), laterally completely overlapped by eyes, finely transversely striate in male, rugulose in female, ventrolateral angles rectangularly or subacutely rounded; mesonotum in middle line longer than pronotum (1·5 : 1), transversely weakly convex, transversely striate in male, rugulose in female. Tegmina brachypterous, scarcely covering fourth abdominal tergite, quadrate, costal margin straight, apical margin longer than costal margin, apical angle rectangulately rounded, apical margin feebly convex, finely (♂) or coarsely (♀) punctate, venation indistinct. Wings absent. Abdomen rather short, in side view with dorsal margin strongly decurved caudad, tergites transversely striate in male, coarsely punctate in female.

Male, black, polished, legs light reddish brown; female dull yellowish-grey, all depressions in derm, dark fuscous; frons apically, clypeus laterally, and metepisterna black, or nearly so.

Anal segment of male short, about as broad as long, apical margin convex. Pygofer rather short, longer ventrally than dorsally, lateral margins in dorsal half each produced posteriorly in a convex lobe. Aedeagus short, bilaterally symmetrical, broadly tubular, dorsal margin with a notch subapically, a pair of decumbent lobes laterally in distal half, apical margin of ventral surface of aedeagus, in ventral view, convex; a pair of spinose processes emerging lateroventrally near apex, curved cephalad then mesad. Genital styles moderately long, in profile with dorsal and ventral margins sub-parallel, the former shallowly concave, the latter straight or weakly convex, apical margin weakly convex, almost vertical, apical dorsal angle produced dorsad in a stout evenly tapering spinose process that is almost half as long as the style itself.

Male, length, 2.0 mm. Female, length, 2.9 mm.

Holotype ♂, South Africa, Drakensberg Mts., Royal Natal National Park, from grassland, 1,515 m, 17.ix.1963 (*B. & P. Stuckenberg*) in Natal Museum.

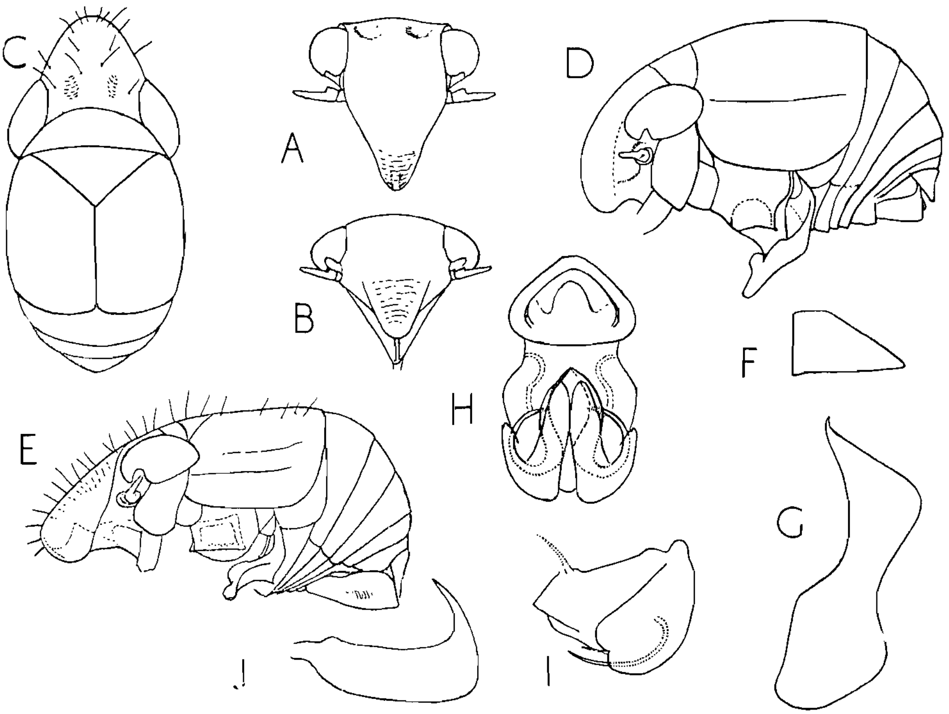

Fig. 21. *Griphissus xenocles* sp. n. A, Head of male, anterodorsal view; B, head of male, anterior view; C, dorsal surface of body of male; D, head, thorax, tegmen and abdomen of male, right side; E, head, thorax, tegmen and abdomen of female, right side; F, anal segment of male, lateral view; G, pygofer, lateral view; H, anal segment of male and aedeagus, posterior view; I, aedeagus, left side; J, left genital style.

3 ♂, 1 ♀, same data; 1 ♀ same data, but taken at 1,500 m, 16.ix.1963.

This species superficially resembles *Issopulex gloriosus* China and Fennah but differs in having the narrow distal portion of the antennae 1.7 times as long as the basal portion, in the eyes being relatively narrower, and acute posteriorly, in the length of the pronotum being more than half that of the mesonotum, and in the protibiae being stout and rather compressed, not slender and terete.

In the female of *G. xenocles* there is a fuscous line along the middle of the vertex, pronotum and mesonotum that suggests the presence of a narrow groove, but no such structure is developed.

Gamergus Stål

Stål, 1859, *Fregatten Eugenies Resa* **4**: 278. Haplotype, *Gamergus hottentottus* Stål, 1859, *loc. cit.*: 279.

Gamergus stali Metcalf

Metcalf, 1958. *General Catalogue of the Homoptera.* Fasc. **4** Pt.15: 323.

South Africa, Natal, Pinetown District, Gillitts, 11.i.1962, i.1964, 1 ♂, 1 ♀, 1 mutilated specimen (*B. & P. Stuckenberg*).

These specimens differ from the type of *Gamergus irroratus* (Walker) **comb.n.** (*Hysteropterum irroratum* Walker, 1851, List of Homopterous Insects **2:** 376) in having the apex of the tegmina more distinctly angulate. The male genitalia, including the aedeagus, are rather closely similar to those of *G. irroratus* but longer series are needed to establish the relationship between the two populations.

Gamergus phintias sp.n. Text-fig. 22, A-H

Vertex broader than long (3 : 1), posterior margin shallowly concave, lateral margins straight, anterior margin shallowly convex, frons longer in middle line than broad (1.2 : 1), widest at level of antennae, basal margin shallowly angulately excavate, lateral margins shallowly convex, diverging to below level of antennae, then incurved to frontoclypeal suture, median carina percurrent; frontoclypeal suture slightly impressed; clypeus narrower than frons at apex, postclypeal portion shorter than frons in middle line (about 1 : 1.7), median carina broad basally, narrowing distad, lateral carinae absent; rostrum surpassing post-trochanters, antennae with basal segment short, second segment subglobose, with about 18 crateriform sensoria distributed fairly evenly over exterior half, ocelli absent, eyes in side view rounded. Pronotum twice as long as vertex in middle line, anterior margin convex, an impression on disc on each side of middle, a short horizontal callus at lateral margin, behind eye, ventrolateral lobes rather large distally, deeply rounded; mesonotum longer than pronotum (1.5 : 1), tricarinate; post-tibiae with two spines laterally, eight apically, basal metatarsal segment with four teeth. Tegmina twice as long as broad, broad

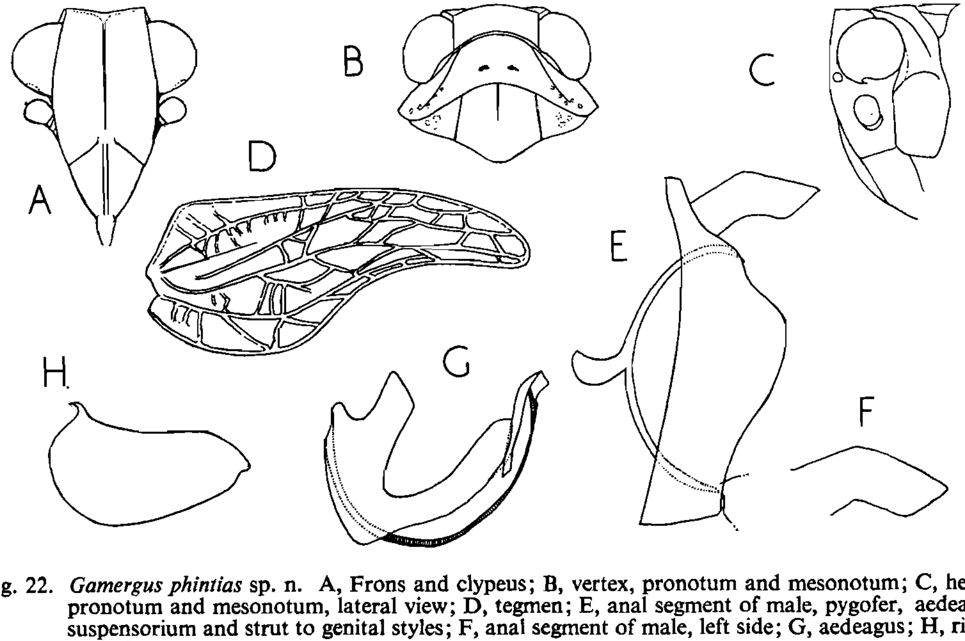

Fig. 22. *Gamergus phintias* sp. n. A, Frons and clypeus; B, vertex, pronotum and mesonotum; C, head, pronotum and mesonotum, lateral view; D, tegmen; E, anal segment of male, pygofer, aedeagal suspensorium and strut to genital styles; F, anal segment of male, left side; G, aedeagus; H, right genital style.

in basal half, narrowing distally, as figured, claval suture absent distally, feebly present in basal half. Wings absent.

Sordid yellow, irregularly sprinkled with fuscous, rostrum, procoxae and mesocoxae anteriorly, metapleura and inner surface of post-femora, dark fuscous. Tegmina coriaceous, subhyaline, a series of spots along costal margin, extending inwards to an irregular longitudinal suffusion, dark fuscous; venation densely reticulate, light yellowish brown.

Anal segment of male short, longer than broad (2 : 1) in profile slightly decurved distad of middle; apical margin in dorsal view rounded. Pygofer rather short, rather compressed laterally, lateral margins produced caudad in a broadly rounded lobe. Aedeagus tubular, unarmed, laterally compressed, U-shaped, a pigmented rod lying along or close to ventral margin from base to apex, sides of aedeagus rather narrow near apex, diverging laterad then incurved to meet in middle line at apex. Genital styles moderately long, broadest at two thirds from base, in side view with dorsal margin straight or feebly sinuate, ventral margin and apical margin convex, the latter deeply inflected throughout its length, dorsoapical process short, subspinose, directed caudad. Connective between base of aedeagus and base of genital styles long, slender and curved.

Male, length, 4.5 mm; tegmen, 3.6 mm.
Female, length, 4.0 mm; tegmen, 3.0 mm.

Holotype ♂, South Africa. Royal National Park, Drakensberg Mountains, 1,500 m, from grassland, 17.IX.1963, 14 ♂, 9 ♀, 1 nymph (*B. & P. Stuckenberg*). Natal Drakensberg, Giant's Castle Res., 5,800 ft., 18-23.ix.1963, 3 ♂, 5 ♀ (*B. & P. Stuckenberg*). Type in Natal Museum.

This species differs from *G. sinuatipennis* Mel. in the relatively narrower vertex and the undifferentiated clavus, and from other species in the shape of the tegmina and male genitalia.

Gamergus croesus sp.n. Text-fig. 23, A-G

Vertex broader at base of middle line than long in middle (4 : 1), posterior margin shallowly concave, lateral margins straight, slightly convergent distad, anterior margin shallowly convex; frons rather longer in middle line than broad (1.1 : 1), widest just distad of level of antennae, basal margin almost straight, lateral margins shallowly convex, diverging to below level of antennae then incurved rather strongly to frontoclypeal suture, median carina distinct throughout, frontoclypeal suture slightly impressed; clypeus at base narrower than frons at apex, post-clypeal portion shorter than frons in middle line (about 1 : 1.4), median carina distinct basally, becoming obsolete distad, lateral carinae absent, rostrum attaining post-trochanters, antennae with basal segment short, second segment subglobose, with about 15 crateriform sensoria distributed fairly evenly over exterior half, ocelli absent, eyes in side view rounded. Pronotum twice as long as vertex in middle line, anterior margin convex, an impression on disc on each side of middle, a short feeble horizontal callus at lateral margins behind eye, ventrolateral lobes rather large distally, deeply rounded; mesonotum longer than pronotum (about 1.6 : 1), with lateral carinae distinct, median carina broad, post-tibiae with two spines laterally, eight apically, basal metatarsal segment with nine teeth. Tegmina longer than broad (1.8 : 1), widest at two thirds from base, claval suture distinct throughout, costal margin straight, broadly rounding into convex-oblique apical margin, Sc + R, M and Cu1 forking in basal quarter, venation more or less reticulate. Wings absent.

Light yellowish-brown; frons, except on median carina, at margins, and on eight spots near each lateral margin, clypeus, except in middle line, vertex, pronotum and mesonotum, except medially and at margins, profemora and protibiae at base and apex, densely sprinkled dark fuscous; mesepimera and postepisterna deeply and uniformly infuscate in ventral half. Tegmina translucent, a broad band from clavus to costal margin near apex, some secondary veinlets in basal half of corium and all veinlets at apical margin, castaneous-fuscous.

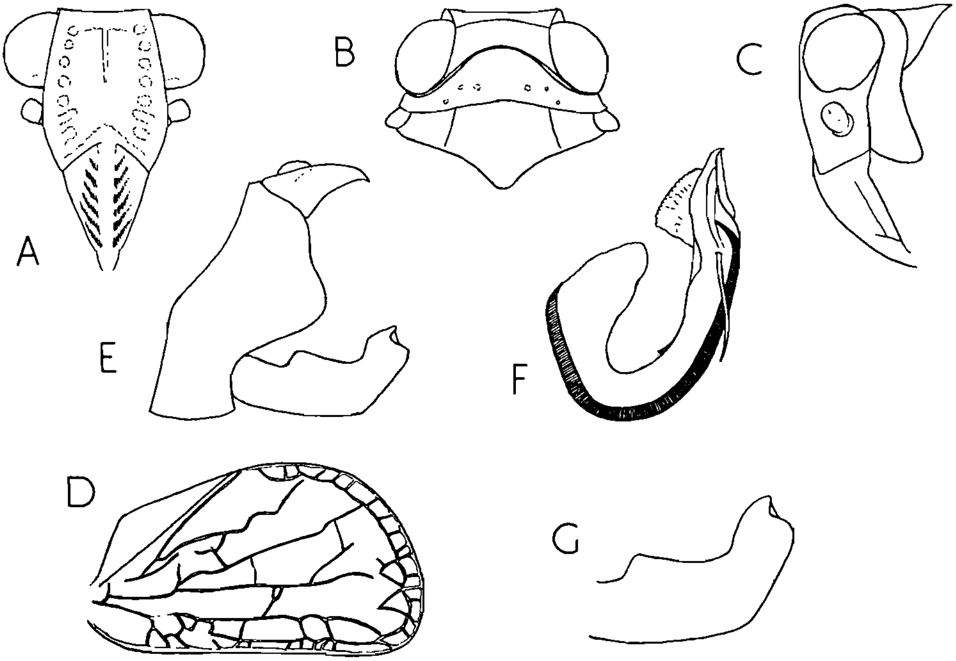

Fig. 23. *Gamergus croesus* sp. n. A, Frons and clypeus; B, vertex, pronotum and mesonotum; C, head, pronotum and mesonotum, lateral view; D, tegmen; E, anal segment, pygofer and genital style, left side; F, aedeagus, left side; G, left genital style.

Anal segment of male short, in profile slightly decurved distad, apical margin in dorsal view convex. Pygofer rather short, compressed laterally, lateral margins broadly produced caudad in an obtusely angulately rounded lobe. Aedeagus tubular, U-shaped, a pigmented rod, upcurved and acute at apex, lying along ventral margin from base to near apex, a minute spinose process dorsally at one third from base, a pair of slender spinose processes emerging laterally at one quarter from apex, directed ventrocephalad. Genital styles moderately broad, subparallel sided, upcurved distally, dorsal margin abruptly excavate near base, apical margin rather strongly excavate, the angles each produced in a blunt spine. Strut between base of aedeagus and base of genital styles long, evenly curved, and rather slender.

Male, length, 4.8 mm. Female, length, 4.9 mm.

Holotype ♂, South Africa, Eastern Cape Province, Humansdorp District, Karreedouw Mountains near Assegaaibos, 28.x.1964 (*B. & P. Stuckenberg*) in Natal Museum. 3 ♂, 3 ♀, same data.

This species is distinguished by the proportions of the head, the number of post-tibial lateral spines, the shape of the tegmina and the form of the male genitalia.

Gamergomorphus Melichar

Melichar, 1906, *Abh. Zool. bot. Ges. Wien* 3: 175. Haplotype, *Gamergomorphus angustipennis* Melichar.

Gamergomorphus dilatatus Synave

Synave, 1956, *Inst. roy. Sci. nat. Belg. Bull.* 32, No. 57: 8.

South Africa, South west Cape, Calvinia District, Nieuwoudtville area, 14.x.1964, 2 ♀ (*B. & P. Stuckenberg*); Clanwilliam District, Pakhuis Pass, 950 m. 17-19.x.1964, 3 ♂, 7 ♀. (*B. & P. Stuckenberg*).

Gamergomorphus angustipennis Melichar

Melichar, 1906, *Abh. zool. bot. Ges. Wien* 3: 175.

South Africa, Cape Province, Humansdorp District, Karreedouw Mountains, near Assegaaibos, 28.x.1964, 1 ♂, 2 ♀ (*B. & P. Stuckenberg*).

Gamergomorphus pallidus Synave

Synave, 1956, *Inst. roy. Sci. nat. Belg.* 32 No. 57: 7.

South Africa, Cape Province, George District, Outeniqua Pass, 24.x.1964, 1 ♂, 1 ♀ (*B. & P. Stuckenberg*).

These specimens are heavily sprinkled with dark fuscous and in lateral view appear generally infuscate except for a broad oblique band extending over the lateral pronotal lobes and the pleurites in their dorsal half, and for the paler ninth abdominal tergite.

Gamergomorphus sp.

South Africa, Cape Province, Humansdorp District, Karreedouw Mountains, near Assegaaibos, 28.x.1964, 1 ♀ (*B. & P. Stuckenberg*).

This species is uniformly green except for the tegmina, which are infuscate.

Paragamergomorphus Synave

Synave, 1956, *Inst. roy. Sci. nat. Belg. Bull.* 32, No. 57: 8. Orthotype, *Paragamergomorphus barnardi* Synave.

Paragamergomorphus barnardi Synave

Synave, 1956, *op. cit.*: 10.

South Africa, South west Cape, Calvinia District, Nieuwoudtville area, 14.X.1964, 1 ♂, 3 ♀ (*B. & P. Stuckenberg*). Clanwilliam District, Pakhuis Pass, 950 m, 17-19.X.1964, 4 ♂, 3 ♀ (*B. & P. Stuckenberg*).

Bowesdorpia Synave

Synave, 1956, *Inst. roy Sci. nat. Belg. Bull.* 32, No. 57: 19. Orthotype, *Bowesdorpia tricornis* Synave.

Bowesdorpia tricornis Synave

Synave, 1956, *op. cit.*: 20.

South west Cape Province, Calvinia Distr., Brandkop area, 14.X.1964, 1 ♀ (*B. & P. Stuckenberg*).

Family *NOGODINIDAE* Muir

Members of this family, as it is currently recognised, have a frons that is longer than broad, a clypeus carinate at its lateral margins, a pair of spines at the apex of the second post-tarsal segment and tegmina without granules near the base and on the clavus.

Females of species of this family, as so defined, have a structural arrangement of the elements of the ovipositor and its associated sclerites that appears to be characteristic, and such a structure appears, as far as shown by a very limited investigation, to be accompanied by the presence of sclerites internally in the otherwise membranous walls of the vagina. One of the features of such an ovipositor that is most readily apparent is the presence of a space between the bases of the third valvulae of the ovipositor and the lateral pieces of the eighth segment. This condition is found in Trienopine Issidae and also in Tropiduchidae, where, indeed, it is more marked.

Males of the Nogodinidae, unlike those of Tropiduchidae, have genital styles that bear a simple spine-like or finger-like process at the distal end of the dorsal margin, and this is directed more or less upward.

In the present collection there are some species that have male and female genitalia that conform very reasonably with those found in this family. The clypeus is often not carinate laterally, but a similar condition is found in such Nogodinid genera as *Bladina*, *Conna*, *Elica*, *Nurunderia*, *Gaetulia*, *Indogaetulia*, *Salona* and *Parasalona*. It is accordingly now proposed to transfer *Xosias*, *Mithymna*, *Colmadona* and *Monteira* from Issidae to Nogodinidae. These, together with the first two genera of this family described below as new, are placed in a new tribe of Nogodinidae, Mithymnini **trib. n.** This is defined as Nogodinidae with broad coriaceous tegmina, a costal margin deeply inflected in its basal portion, a costal vein apparently occupying a submarginal position distally, a basal cell about twice as long as broad, with Sc + R emerging much basad of M; eyes truncate posteriorly and shaped like the quadrant of a sphere, and only narrowly emarginate above antennae, and ocelli distinct, opaque, rarely represented only by a scar.

Telmosias gen.n.

Vertex about four times as broad as long in middle, posterior margin concave, lateral margins diverging distad, anterior margin convex, base of frons visible in dorsal view; frons as broad as long in middle, convex transversely and in profile, lateral margins shallowly arcuate, disc ecarinate, but with three shallow linear elevations near base, suggestive of carinae, clypeus ecarinate, rostrum attaining post-trochanters, subvertical, subapical segment longer than apical, ocelli present, even if non-functional, antennae with basal segment short, ring-like, second segment subglobose, eyes in side view broadly rounded, longer dorsoventrally than horizontally, with only a small excavation below, and bordered posteriorly with a narrow callus. Pronotum longer than vertex, anterior margin convex, posterior margin transverse, medially ecarinate, an impression on each side of middle line, ventrolateral lobes with lateroventral angle acutely rounded, apical margin inflected forward; mesonotum twice as broad as long, disc smooth, lateral carinae of disc parallel, a pustule or short carina on each side outside these carinae; post-tibiae with one spine laterally, seven apically, basal metatarsal segment with about five teeth apically. Tegmina coriaceous, shallowly convex, steeply tectiform, a little longer than broad, costal margin strongly inflected in basal three-sevenths, then obtusely angulately bent, apical angle broadly rounding into apical margin; which is slightly convex, anal angle obtusely rounded, C marginal in basal portion, submarginal distally, a distinct humeral callus present, basal cell about twice as long as broad, Sc + R leaving cell much basad of M, longitudinal veins forked, distinct, transverse veinlets rather weak, claval suture distinct, claval veins uniting at middle of clavus. Wings absent.

Type species, *Telmosias crito* sp.n.

This genus differs from *Xosias* Kirkaldy in the relatively longer vertex, the greater degree of prominence of the ocelli (which are apparently non-functional) and the much less rounded tegmina; from *Mithymna* Stål in the presence of a distinct claval suture, less rounded tegmina, and a relatively longer vertex, and from *Colmadona* Kirkaldy in the shape of the head and the number of spines and teeth on the post-tibiae and post-tarsi.

The generic name is an arbitrary combination of letters and is considered to be of masculine gender.

Telmosias crito sp.n. Text-fig. 24, A-G

Vertex broader at anterior margin than long at sides (3 : 1), lateral margins straight, very slightly diverging distad, anterior margin shallowly convex, median carina broad, disc shallowly impressed between it and lateral margins, frons almost as long in middle line as broad at level of ocelli, basal margin straight, disc medially carinate, frontoclypeal suture impressed laterally; clypeus narrower than frons at apex, postclypeal portion shorter than frons (about 1 : 1.7), rostrum with subapical segment longer than apical (1.7 : 1), with nine crateriform sensoria in anterior half, distributed both dorsally and ventrally. Pronotum in middle line fully twice as long as vertex in middle line, a fine groove present medially and a distinct impression on each side of it, lateral lobes rather long, subparallel-sided, lateroventral angle acutely rounded, apical margin oblique and weakly inflected forward, no carina developed at lateral margin between eye and base of tegmen; protibiae and mesotibiae with outer margins weakly foliaceous, basal metatarsal segment with five teeth apically. Tegmina coriaceous, little surpassing abdomen, widest just basad of middle, apical angle broadly subrectangulately rounding into apical margin, C marginal in basal three sevenths, then submarginal to union with Sc near apex, Sc + R forked just basad

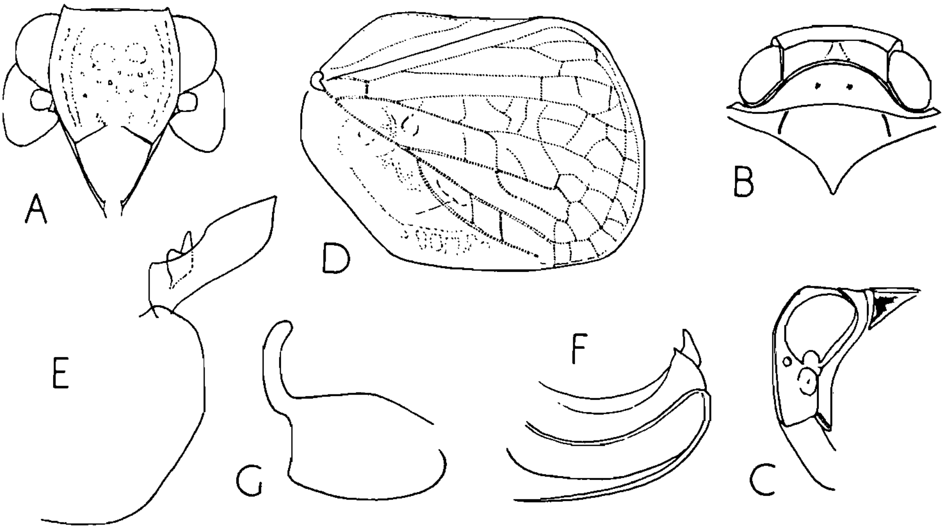

Fig. 24. *Telmosias crito* sp. n. A, Frons, clypeus and lateral lobes of pronotum; B, vertex, pronotum and mesonotum; C, head, pronotum and mesonotum, lateral view; D, tegmen; E, anal segment of male and posterior margin of pygofer, left side; F, aedeagus, left side; G, right genital style.

of middle of tegmen, M forked at one third from base, Cu1 forked near middle, claval suture distinct, claval veins uniting distad of middle of clavus.

Pale brownish yellow, marbling on frons, apart from a pair of round spots in middle of disc, a series of oblique stripes on each side of postclypeal disc, rostrum, sides of head below eyes, and sides of clypeus, pronotal lobes behind antennae, lateral angles of mesonotum, except for pustule, longitudinal stripes on femora and tibiae of fore and middle legs, protarsi, mesotarsi, and distal half of third segment of post-tarsi, castaneous or fuscous. Tegmina translucent, uniformly light yellowish brown.

Anal segment of male moderately long, in profile with ventral margin sinuate, convex in distal half, apical margin rounded, anal foramen situated basad of middle. Pygofer short, dorsally retracted under eighth tergite, lateral margins feebly convex, produced mesad in a shallow rim. Aedeagus as long as anal segment, submembranous, relatively broad, in side view shallowly curved upward distad, dorsal margin concave, ventral margin convex, a minute spinose process arising on each side dorsally at apex; a pair of long taeniate phallic appendages traversing aedeagus from base to emerge below apex, then recurved below aedeagus for most of its length, acuminate apically. Genital styles moderately large, broad, dorsal margin almost straight, ventral margin convex, dorsoapical angle produced dorsomesad in a shallowly curved finger-like process that is as long as depth of genital style. Male, length, 3.6 mm; tegmen, 3.2 mm.

Holotype ♂, South Africa, south-west Cape, Calvinia District, Brandkop area, 14.x.1964 (*B. & P. Stuckenberg*), in Natal Museum. 4 ♂, 3 ♀, same data. South-west Cape, Knersvlakte, north of Van Rhynsdorp, 6-9.x.1964, 1 ♂, 12 ♀ (*B. & P. Stuckenberg*).

This species is distinguishable by its coloration and the structure of the aedeagus.

Telmosias curviceps (Synave) comb.n.

Hysteropterum curviceps Synave, 1956, *Inst. roy.Sci. nat. Belg.* **32.** No. 57: 18.

Telmosias plato sp.n. Text-fig. 25, A-G

Vertex broader at anterior margin than long at sides (2.6 : 1), lateral margins straight, elevated, anterior margin transverse, slightly indented at middle, median carina very feeble, disc shallowly transversely concave; frons distinctly shorter in middle line than broad at level of ocelli (about 1 : 1.3), basal margin shallowly concave, disc ecarinate in basal half with a median carina in distal half, in profile feebly convex; clypeus narrower than frons at apex, postclypeal portion shorter than frons medially (1 : 1.5), broadly medially carinate basally, rostrum with subapical portion longer than apical (1.5:1), antennae with about 18 crateriform sensoria in anterior half, dorsally and ventrally. Pronotum in middle line longer than vertex in middle line (2.5 : 1), a broad shallow depression medially and a small punctiform impression on each side of middle, lateral lobes rather long, subparallel sided, lateroventral angle acutely rounded, apical margin oblique and weakly inflected forward; no carina present at lateral margin between eye and base of tegmen; protibiae and mesotibiae with outer margins weakly foliaceous, basal metatarsal segment with eight teeth apically. Tegmina coriaceous, moderately surpassing abdomen, widest just basad of middle, apical angle obtusely rounding into apical margin, which is weakly convex, C marginal in basal three-sevenths, then submarginal, Sc + R forked a little basad of middle of tegmen, M forked at middle, Cu1 forked slightly basad of middle, claval suture distinct, claval veins uniting distad of middle of clavus.

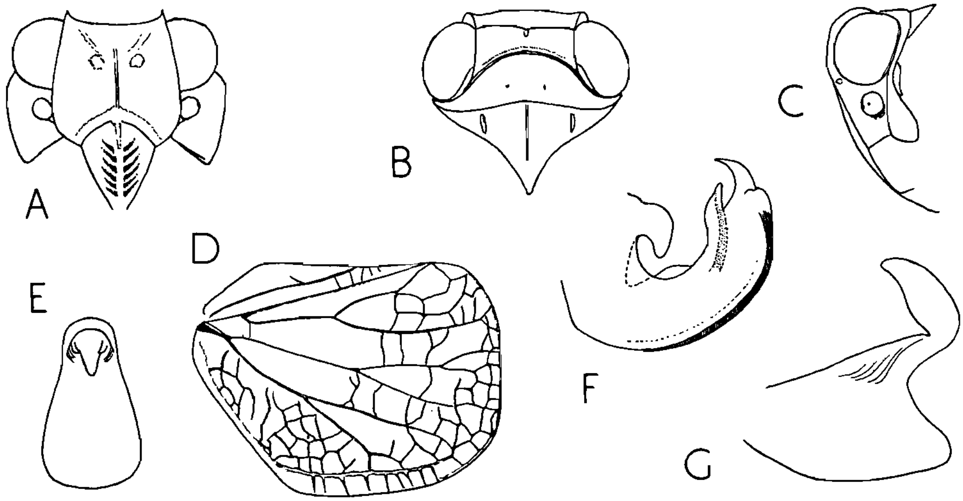

Fig. 25. *Telmosias plato* sp. n. A, Frons, clypeus and lateral lobes of pronotum; B, vertex, pronotum and mesonotum; C, head, pronotum and mesonotum, lateral view; D, tegmen; E, anal segment of male, posterior view; F, aedeagus, left side; G, left genital style.

Yellowish-brown; frons, except for two spots near middle of disc, and distal margin, chevron-like markings on clypeus, pronotum and mesonotum except in middle line and at margins, and fore and middle legs except at margins, dark fuscous or piceous. Tegmina dark yellowish brown, venation lighter.

Anal segment of male rather long, in dorsal view broadly spatulate, widest at apex. Pygofer moderately long, posterior margin almost straight, laterodorsal angles broadly rounded, not produced. Aedeagus shallowly curved upward distad, a pair of triangular lobes, united by a transverse ridge, dorsally on each side at base; a smaller triangular lobe dorsally near apex, lateral margins dorsally and also ventrally with a row of minute teeth, terminating in an acute lobe at apex; a pair of long spinose phallic appendages emerging ventrolaterally near apex, recurved below aedeagus for most of its length. Genital styles moderately large, broad, ventral margin shallowly convex, dorsal margin produced dorsad in a large S-shaped lobe, which narrows distally, and curves cephalad and becomes hollowed out on its anterior surface.

Male, length, 3.4 mm; tegmen, 3.2 mm. Female, length, 3.3 mm; tegmen, 3.1 mm.

Holotype ♂, South Africa, South-west Cape, Calvinia District, Brandkop area, 14.x.1964 (*B. & P. Stuckenberg*) in Natal Museum. 1 ♀, same data.

This species is readily distinguishable from *T. crito* by its larger size, and by the shape of the frons and of the tegmina, as well as by the shape of the genital styles. From *T. curviceps*, it differs in the shape of the frons and vertex, in the relatively longer aedeagal spinose processes, and in the shape of the genital styles.

Telmessodes gen.n.

Vertex much broader than long, posterior margin concave, lateral margins straight, anterior margin transverse, base of frons visible from above; frons about as long in middle line as broad at widest part, basal margin transverse or nearly so, lateral margins shallowly convex, incurved below level of ocelli, disc convex transversely and in profile, medially ecarinate, frontoclypeal suture lightly impressed laterally; clypeus narrower than frons at apex, postclypeal portion shorter than frons in middle line, not carinate laterally or medially, rostrum attaining post-trochanters, subapical segment longer than apical; ocelli present, even if non-functional; antennae with basal segment short, second segment subglobose, eyes in side view broadly rounded, very little excavate below, bordered posteriorly with a narrow callus. Pronotum in middle line much longer than vertex, anterior margin strongly convex, posterior margin transverse, median carina weak or obsolete, lateral lobes rather long, subparallel-sided, deeply rounded distally, with apical margin inflected anteriorly, mesonotum broader than long, medially ecarinate, lateral carinae parallel, protibiae and mesotibiae with outer margins prominent, post-tibiae with one spine laterally near apex, seven or eight teeth apically, basal metatarsal segment with about eight teeth apically. Tegmina coriaceous, little surpassing abdomen, widest at about one third from base, costal margin convex, strongly inflected mesad in basal portion, apical angle subrectangularly rounded, apical margin weakly convex, anal angle obtusely rounded, claval suture distinct. Wings vestigial or absent.

Type species, *Telmessodes proconsul* sp.n.

This genus, if run down in Melichar's key to Hysteropterine Issidae (1906: 100) runs to *Xosias* Kirkaldy or *Colmadona* Kirkaldy (*Telmessus* Stål). From the former it differs in the proportions of the frons and the shape of the tegmina, and from the latter, to which it is apparently fairly closely allied, in the curved disc of the frons and absence of a median carina, the less elevated sides of the vertex, and relatively greater width, and in the shape of the tegmina.

Telmessodes proconsul sp.n. Text-fig. 26, A-G

Vertex broader than long (5.6 : 1), disc feebly impressed inside posterior margin and along middle line, median carina absent; frons as long in middle line as broad at widest part, basal margin shallowly angulately excavate, postclypeal portion shorter than frons (about 1 : 1.4), rostrum subvertical, subapical segment longer than apical (about 1·5 : 1); antennae with second segment with nine crateriform sensoria in anterior half, distributed both dorsally and ventrally. Pronotum in middle line twice as long as vertex, with no carina developed between eye and base of tegmen; mesonotum with a broad shallow ridge on each side of middle line, which is shallowly grooved; protibiae and mesotibiae with outer margins weakly foliaceous, basal metatarsal segment with eight teeth apically. Tegmina widest at one third from base, costal margin strongly inflected mesad in basal three-sevenths, C marginal in basal three-sevenths then lying submarginally and uniting with Sc, which is simple and, in turn, almost meets R at apex, M forked at about one third from base, Cu1 simple, claval veins uniting at middle of clavus.

Stramineous; a little marbling in basal third of frons, and six spots near each lateral margin, chevron patterning on clypeus, apical segment of rostrum, a mark on sides of head

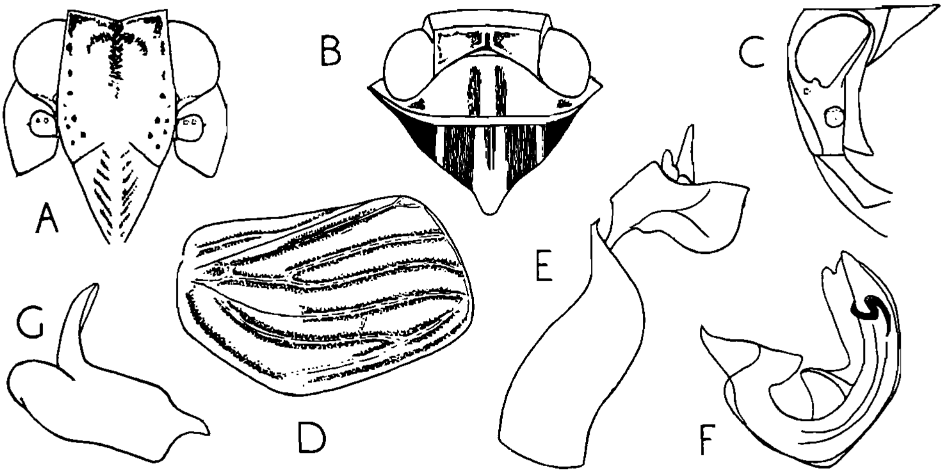

Fig. 26. *Telmessodes proconsul* sp. n. A, Frons, clypeus and lateral lobes of pronotum; B, vertex, pronotum and mesonotum; C, head, pronotum and mesonotum, lateral view; D, tegmen; E, anal segment of male and pygofer, left side; F, aedeagus, left side; G, right genital style, lateral view.

above eyes, a suffusion bordering middle line of vertex on each side, a linear suffusion on each side of middle line, and another in lateral fields of pronotum, mesonotum except for carinae, dark reddish brown; fore and middle legs, and abdominal segments, lightly suffused with brown. Tegmina light yellowish brown, subhyaline, veins stramineous, bordered with dark reddish brown.

Anal segment of male rather short, in posterior view with lateral margins strongly flaring laterad; in side view with ventral margin strongly produced ventrad in distal half in a deeply convex lobe. Pygofer moderately long, in side view with lateral margin sinuate, convex in dorsal half. Aedeagus long, tubular, strongly curved upward distad, a pair of rounded lobes on each side dorsally at base, extending caudad, an unpaired vertical spinose process dorsally at middle, carrying up with it membrane of dorsal surface in tent-like form, a pair of short stout sigmoidal processes emerging dorsally a little before apex, directed cephalad at their tip. Genital styles moderately long, in side view with dorsal and ventral margins parallel, apical margin deeply rounded, a stout process arising dorsally in distal third, directed dorsad, produced mesad in a broad flange, so as to appear spatulate in posterior view.

Male, length, 3.2 mm; tegmen, 3.5 mm. Female, length, 4.0 mm; tegmen, 4.2 mm.

Holotype ♂, South Africa, Cape Province, Aliwal North, xii.1922 (*R. E. Turner*) Brit.Mus. 1923-45, in B.M. (N.H.). Allotype ♀, South Africa, Cape Province, Somerset East, 1-9.xii.1930 (*R. E. Turner*) Brit.Mus. 1931-12.

This species differs from *Mithymna pergamena* Stål in the proportions of the frons and vertex, in the presence of a well developed claval suture, in the shape of the pregenital sternite of the female, and of the third valvulae of the ovipositor. In the male it differs in coloration and in the structure of the aedeagus.

Stilpnochlaena gen.n.

Head, including eyes, narrower than pronotum, vertex more than three times as broad as long, posterior margin concave, lateral margins slightly diverging distad, anterior margin transverse, all margins elevated, disc depressed, base of frons visible from above; frons in middle line as long as broad, or a little longer than broad, lateral margins diverging to below level of antennae, then strongly incurved to frontoclypeal suture; clypeus narrower than frons at apex, not carinate laterally; rostrum not quite attaining post-trochanters, subapical segment longer than apical (less than 2 : 1), antennae with basal segment short, second segment subglobose, ocelli present, even if non-functional, eyes broadly rounded, longer dorsoventrally than horizontally, little, if at all, excavate below, bordered posteriorly with a narrow callus. Pronotum distinctly longer than vertex, anterior margin of disc strongly convex, posterior margin transverse, disc depressed along middle, median carina absent, an impression on each side of middle line, lateral lobes with outer margin convex, rather broadly rounded at apex; mesonotum broader than long, medially ecarinate, a pair of lateral carinae present, post-tibiae with two spines laterally, eight apically, basal metatarsal segment with about eight teeth apically. Tegmina subcoriaceous, polished, only a little surpassing apex of abdomen, widest in basal half, costal margin convex, not at all inflected mesad below, a distinct pre-costal area present from base to apex, costal cell broad in basal half, basal cell of tegmen about three times as long as width (between Sc + R and Cu) at its apex, Sc + R leaving cell at same point as M, apical angle of tegmen acutely, anal angle obtusely, rounded, apical margin convex, oblique longitudinal veins distinct, transverse veinlets forming an irregular reticulum, a line of narrow areolets adjoining apical margin, claval suture distinct, claval veins uniting at middle of clavus. Wings as long as tegmina, anal area reduced.

Type species, *Stilpnochlaena xeno* sp.n.

This genus bears some resemblance to *Kiomonia* (described as an Issid), but differs in the absence of carinae on the clypeus, the bispinose condition of the post-tibiae, and the structure of the genitalia; from *Ikonza* (described as an Issid), it differs in the width of the head, including the eyes, being narrower than the pronotum, in the presence of ocelli and in the structure of the tegmina.

Stilpnochlaena xeno sp.n. Text-fig. 27, A-G

Vertex quadrate, broader than long (3.6 : 1), medially ecarinate; frons very slightly longer in middle line than broad (less than 1.1 : 1), basal margin straight, disc in side view convex basally, concave distally, median carina distinct except at extreme base and apically; frontoclypeal suture impressed; postclypeal portion of clypeus about half as long as frons, median carina represented by a rather broad weak ridge, subapical segment of rostrum longer than apical (1.7 : 1), ocelli apparently not functional. Pronotum in middle line fully twice as long as vertex, posterior margin transverse or even feebly convex, ventrolateral lobes broadly rounded, a short horizontal callus in posterior half near tegulae; mesonotum broader than long, ecarinate medially and with a pair of lateral carinae on each side strongly diverging laterad, two impressions, and two short incomplete carinae on disc near hind margin, profemora and mesofemora with lower anterior margin weakly foliaceous; protibiae and mesotibiae with both external margins moderately foliaceous; basal metatarsal segment with eight teeth apically, second segment with two. Tegmina widest at three-eighths from base, costal margin strongly convex in basal half, weakly so distally, acutely rounding into oblique apical margin; Sc + R forked near middle of tegmen, and M forked at about same level, Cu1 simple, claval suture distinct, claval veins uniting at middle of clavus, secondary venation reticulate. Wings as long as tegmina, R and M simple, Cu1 forked once, anal area reduced.

Light castaneous, rather polished; a transverse band across frontoclypeal suture, genae below antennae, labrum and rostrum, lower margins of lateral pronotal lobes, femora apically, tibiae basally and post-tibiae distally also, post-tarsi, and basal two segments of protarsi and mesotarsi, pallid or stramineous. Tegmina light castaneous, main veins reddish brown, secondary veinlets tawny, a broad band across base pallid, almost hyaline. Wings sordid white basally, dilute fuscous distally, veins fuscous.

Anal segment of male rather short, in side view with lower margin produced ventrad just distad of middle in an obtusely angulate lobe. Pygofer moderately long, in side view with lateral margins convex in dorsal half and moderately inflected mesad, oblique and slightly concave in distal half. Aedeagus long, tubular, U-shaped, a pair of long taeniate processes emerging apically, recurved below aedeagus and extending to its base, each

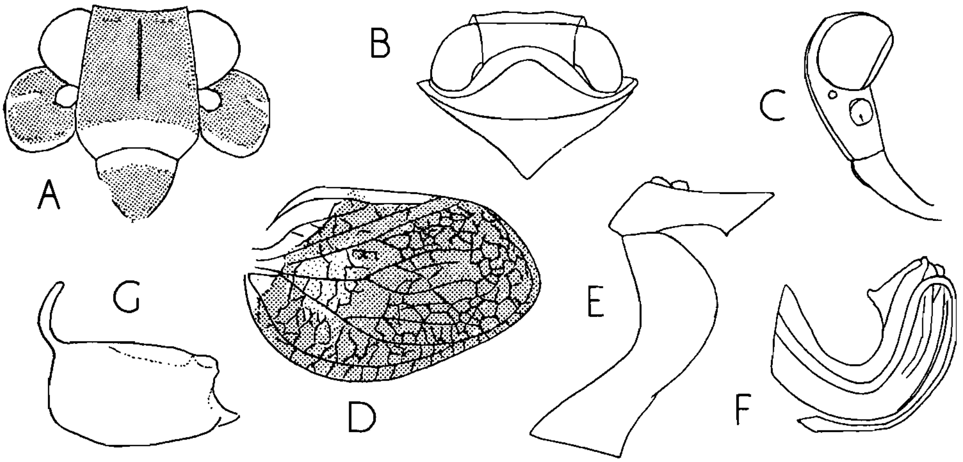

Fig. 27. *Stilpnochlaena xeno* sp. n. A, Frons, clypeus and lateral lobes of pronotum; B, vertex, pronotum and mesonotum; C, head in profile; D, tegmen; E, anal segment of male and pygofer, left side; F, aedeagus, left side; G, right genital style.

abruptly tapering to a point. Genital styles large, subquadrate, in side view with ventral margin feebly convex, almost straight, distally rounding through 90° into apical margin, dorsal margin straight, dorsoapical angle strongly produced dorsad in a rather narrow parallel-sided lobe that is rounded apically.

Male, length, 4.0 mm; tegmen, 4.1 mm.

Holotype ♂, South Africa, Pondoland, Port St. Johns, ix.1923 (*R. E. Turner*) Brit. Mus. 1923-510 in B.M. (N.H.). 1 mutilated specimen, same data.

This species is distinguished by the proportions of the frons, its shape in profile, and by coloration.

Afronias gen.n.

Vertex transverse, at least four times as broad as long in middle, slightly arcuate, with anterior and posterior margins parallel, frons quadrate, widest basally, about as broad as long in middle line, disc tricarinate; clypeus carinate laterally, rostrum surpassing post-trochanters, subapical segment longer than apical; antennae with first segment short, ring-like, second segment subglobose, more or less evenly beset with crateriform sensillae, third segment about as long as broad; lateral ocelli strongly present, ovate, eyes, in side view, about as long as broad, a small excavation on ventral margin, a narrow callus bordering posterior margin. Pronotum longer than vertex, laterally completely overlapped by eyes, anterior margin shallowly convex, posterior margin shallowly concave; mesonotum longer than vertex and pronotum combined, more than twice as broad as long, disc tricarinate; femora and tibiae of fore and middle legs slightly compressed, post-tibiae with four spines laterally, eleven apically; basal metatarsal segment with 12 teeth apically. Tegmina coriaceous, just covering abdomen, broadest near base, deeply rounding to apex, C simple, costal margin inflected near base, Sc and R forking near base, each simple to apex, M, Cu2, PCu and first anal vein simple, Cu1 simple or forked basally, all veins parallel to margin. Wings absent. Abdomen rather depressed. Pregenital sternite of female narrow, posterior margin convex at middle.

Type species, *Afronias tetrablemma* sp.n.

This genus is distinguished by the shape and carination of the frons, the proportions of the vertex, the number of spines on the metatibiae and tarsi, the form, venation and shallowly tectiform carriage of the tegmina and the form of the pregenital sternite.

The generic name is an arbitrary combination of letters and is considered as feminine in gender.

Afronias tetrablemma sp.n. Text-fig. 28, A-G

Vertex 6.5 times as broad as long in middle, ecarinate medially, margins slightly elevated; frons broader at base than long in middle (1.2 : 1), convex in basal two thirds, becoming depressed in apical third, lateral margins weakly sinuate, indented distad from level of ocelli, disc tricarinate in basal half, sublateral carinae becoming transformed into shallow grooves distally; clypeus as long as frons, disc convex, tricarinate. Pronotum medially carinate, a depression on each side of it, and two feeble pustules on each side

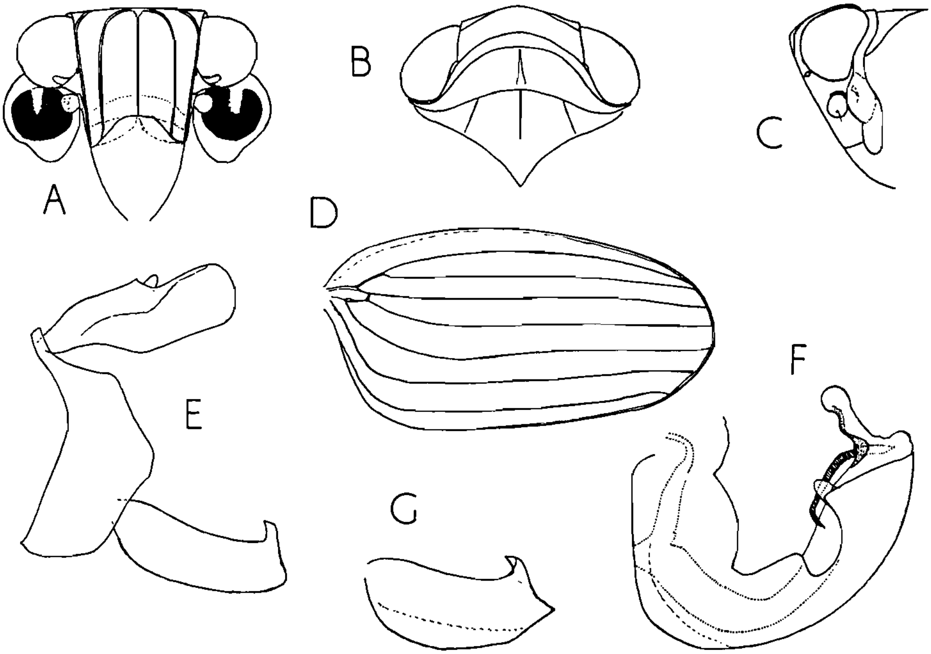

Fig. 28. *Afronias tetrablemma* sp. n. A, Frons, clypeus and lateral lobes of pronotum; B, vertex, pronotum and mesonotum; C, head, pronotum and mesonotum, lateral view; D, tegmen; E, anal segment of male, pygofer and left genital style, lateral view; F, aedeagus, left side; G, left genital style, ventrolateral view from left.

laterad of this depression, lateral lobes relatively large, facing anteriorly, a large rounded polished eminence occupying most of surface.

Castaneous-fuscous; margins of vertex, median carina of pronotum, four spots on anterior margin of mesonotum, metapleura, post-femora basally, abdominal sternites at posterior margin, tawny; frons in basal three quarters, genae between eyes and antennae, polished eminence on lateral lobes of pronotum, and mesepimeron in part, piceous; frons distally, genae below antennae and lower portion of lateral lobes of pronotum, except lower margin itself, stramineous, in life overlain with white secretion. Tegmina dull reddish brown, a few transverse linear marks, sometimes overlying immersed transverse veinlets, tawny basally, paler in distal half of tegmen.

Anal segment of male moderately long, steeply tectiform in distal half, anal style situated approximately at middle. Pygofer moderately long, lateral margins in profile each produced caudad in an obtusely rounded lobe. Aedeagus tubular, rather strongly curved dorsad, a pair of stout submembranous vertical processes, knob-like at tip, arising dorsally at apex; a pair of rather slender spinose processes, each about one third of length of aedeagus, arising laterally at apex, directed cephalad, decurved at tip. Genital styles about three times as long as broad at middle, in side view gradually narrowing distad, apical margin oblique, dorsoapical process short and stout, slightly curved basad at tip.

Anal segment of female about as broad as long, lateral margins converging distad, rounding strongly to meet in middle line apically. Ovipositor with third valvulae moderately long, subtriangular in side view, ventral and apical margins confluent, inflected, rather polished, creamy-white.

Male, length, 4.4 mm; tegmen, 3.4 mm. Female, length, 6.2 mm; tegmen, 5.0 mm.

Holotype ♂, South Africa, Cape Province, Ceres, 1,500 ft., i.1921 (*R. E. Turner*) B.M. 1921-78, in B.M. (N.H.). Allotype ♀, same data.

This squat species is completely unlike any other known Nogodinid, and its superficial appearance is more like that of a Eurybrachyid.

Family *GENGIDAE* Fennah

Acrometopum Stål

Stål, 1853, *Öfv. Svensk. Vet. Akad. Förh.* 10: p.266. Haplotype, *Acrometopum costatipenne* Stål, 1855, *Öfv. Svensk. Vet. Akad. Förh.* 12: 94.

Parametopus Melichar, 1906, *Abh. Zool. bot. Ges. Wien* 3: 244.

Gengis Fennah, 1949, *Ann. Mag. nat. Hist.* (12)2: 111. syn.n.

Acrometopum was placed by Stål in the Issidae. The type species may prove to be the same as *Gengis panoplites* Fennah (1949, *op. cit.*: 113) but a comparison of the types is needed to settle this point.

According to Article 40 of the International Rules of Zoological Nomenclature, the original name of the family is to be preserved.

Microeurybrachys Muir

Muir, 1931, *Ann. Mag. nat. Hist.* (10)7: 312. Orthotype, *Microeurybrachys vitrifrons* Muir.

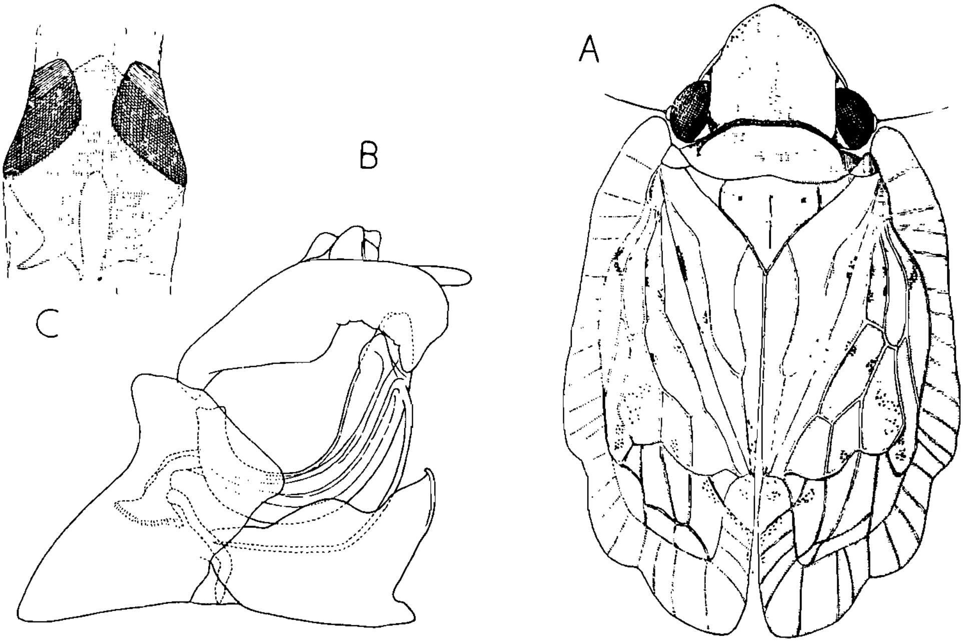

Fig. 29. *Microeurybrachys vitrifrons* Muir. A, Dorsal surface of body; B, anal segment of male, pygofer, aedeagus (visible in transparency) and left genital style, lateral view, (figures prepared by Dr. W. J. Knight); C, vagina viewed dorsally to reveal shape of sclerotised portions of wall.

Microeurybrachys vitrifrons Muir. Text-fig. 29, A-C

Muir, 1931, *Ann. Mag. nat. Hist.* (10)7: 313.

Figures are given to supplement the original description. These were made from a specimen in a series of 1♂ 5♀ from South Africa, Cape Province, Storms River mouth, 18.ii.66, (*A. L. Capener*).

Date received: 21 September, 1966.

APPENDIX

Notes on the habitat of some of the species

by

B. R. Stuckenberg

(Natal Museum, Pietermaritzburg)

In the introduction to his paper, Fennah has observed that some of the Fulgoroidea in the various families falling within the scope of his study exhibit a remarkable degree of convergent evolution in respect of body form, texture of the integument and tegmina, reduction and loss of the wings, and to some degree coloration. Characteristically the body is rather stout and squatly ovate to subglobose, the integument coriaceous, the tegmina brachypterous, the wings very reduced or absent, and the colouring mottled dull yellowish-brown to dark brown. These features certainly are very striking and call for explanation.

As the parallel trends occur in several families it is likely that the selective factors responsible are environmental ones. It can also be assumed that as these insects are phytophagous their evolution and distribution are correlated, in part at least, with that of their host plants. Field experience in fact has revealed clearly that many of the species are directly associated with well-defined vegetation communities.

SPECIES ASSOCIATED WITH THE MACCHIA VEGETATION

Macchia is a highly characteristic, distinctive, taxonomically rich and extensively documented component of the South African flora. The name *macchia* originally was applied to the vegetation of the Mediterranean area, which presents many features similar to its South African counterpart, and some authors (e.g. Story, 1952 : 73) prefer the local term *fynbos* (an Afrikaans name referring to the appearance of the plants) for the latter. The macchia has a characteristic form; in appearance it is composed mainly of closely-aggregated bushes with small, flat, leathery leaves and densely-branched, often woody stems. Its essential feature is its sclerophyllous nature. Writing of macchia in the Eastern Cape Province, Story (*op. cit.* : 76) says, "The plants making up the local macchia are as a rule compact, unarmed, dark green bushes, seldom more than 10 feet in height, profusely and rigidly branched and with ericoid leaves, and the different genera and species may be superficially so much alike that persons not well acquainted with it sometimes make the mistake of thinking only one species is present. It is not found in places where the average annual rainfall is below 25 inches, but may be expected anywhere the rainfall is above this figure." It is this growth form that defines the macchia, not its taxonomic composition which in fact is complex and changes from locality to locality and with succession. Acocks (1954 : 152-3) lists 25 families of plants some genera of which may occur as dominants in all the variations of the macchia. One noteworthy feature is the extensive radiation of families such as Proteaceae and Ericaceae which have a wide but discontinuous distribution outside South Africa.

Macchia is distributed mainly along the folded mountain ranges of the southern, eastern and south-western Cape, with outliers in the north-west, the Eastern Highlands of South Africa, and montane areas further north in the eastern side of Africa. Its distribution is very much affected by aspect, and on the fold ranges of the Cape Province it is generally best developed on the more mesic sea-facing southern and south-western slopes. These are the wettest and coolest slopes, receiving a large share of the orographic rainfall and a lesser amount of insolation. In the south-west Cape, macchia is "particularly associated with sandstone and poor white sandy soils" (Acocks, *op. cit.* : 153). The marked morphological adaptations of the flora are involved with the ability to control transpiration in times of environmental stress. Story (*op. cit.* : 75) writes, "There is general agreement among those authors who touch on its ecology that macchia is a more xerophytic type of vegetation than forest, and its leaf structure supports this view. Its presence in the Mediterranean region and in others where the climate is similar may be explained by the fact that such regions are physiologically dry." With climatic change towards wetter conditions forest is favoured at the expense of macchia; under drier conditions, towards semi-desert, macchia may be replaced by karoo vegetation which also is characteristically South African and is markedly xerophytic, occurring in the semi-desert parts of the country and originally derived from both the macchia and the tropical flora (Acocks, *op. cit.* : 2).

Obviously the macchia of South Africa is an old, long-established flora, locally evolved, in contrast to the tropical forest, savannah and grassland communities that have invaded the country from the north. According to Acocks (*op. cit.* : 5) both the macchia and karoo floras were well established before grasses evolved, the macchia being capable of covering the soil quite adequately without the help of grasses. Macchia in some form may thus have formerly been widely distributed in areas which are now tropical grassland and savannah, and perhaps was pushed back by sward-forming tropical grasses, when they appeared, into montane areas and the winter-rainfall zone.

Of the 27 species collected by my wife and myself, the following eleven were obtained with the sweepnet in macchia and appear to be definitely associated with that vegetation:

Dictyopharidae
- †*Risius limonias* Fenn.
- †*Risius belona* Fenn.
- †*Risius porrectus* Fenn.
- †*Risius patroclus* Fenn.

Tropiduchidae
- *Turneriola* sp.

Issidae
- †*Gamergus croesus* Fenn.
- **Gamergomorphus dilatatus* Synave
- †*Gamergomorphus angustipennis* Melichar
- †*Gamergomorphus pallidus* Synave
- †*Gamergomorphus* sp.
- **Paragamergomorphus barnardi* Synave

Collecting sites at the Pakhuis Pass (species marked *) sometimes included grassy patches and clumps of *Restio* spp. from which some of the specimens might have come. Species from areas with perennial rainfall are marked †; the remaining three species are from the winter-rainfall area.

In addition, the locality records for the following species suggest strongly that they are also associated with the macchia: the achilids, *Afrachilus mirabilis* Fenn. and *Brachypyrrhilis fuscoclypeata* Fenn.; the dictyopharids, *Capena fuscinervis* Stål, *Codon praestana* Fenn., *Strongylodemas breviceps* Fenn. and *Capenopsis minos* Fenn.; the nogodinids, *Telmessodes proconsul* Fenn. and *Afronias tetrablemma* Fenn.

SPECIES FROM KAROO VEGETATION

The following six species were collected in localities more arid than those in which the species of the preceding section were found:

Dictyopharidae

Capenopsis horvathi Melichar. The habitat was coastal sandveld; the specimens were swept from small, isolated, woody, fine-leaved bushes growing in sandy, calcareous terrain adjacent to the Atlantic shore. These bushes were widely separated by stretches of sparse grass and low, weedy growth. The climate is maritime, generally cool and often windy, with a winter rainfall not exceeding 5 inches.

Capenopsis socrates Fenn. Found in small, scrubby, rather woody bushes growing singly in open, gently undulant, sandy, arid country of low altitude. Climate hot in summer, cool in winter and spring, winter rainfall only, not exceeding 5 inches, night fogs frequent.

Tecmar pausianas Fenn. Obtained in the same locality as the preceding species. Also collected in the Calvinia District in an especially xerophytic type of macchia. Apparently prefers small, bushy plants in dry country.

Issidae

Bowesdorpia tricornis Synave. Collected by sweeping woody, many-branched, scrubby bushes up to waist-height, scattered on quite steep, stony hillslopes and growing along a dry, sandy river-bed. The locality Brandkop is in an intensely arid valley lying in rain-shadow, and most of its vegetation is karooid and succulent. Occasional rains may fall during rare thunderstorms.

Nogodinidae

Telmosias crito Fenn., *T. plato* Fenn.

Both these species were taken in company with *Bowesdorpia tricornis.*

SPECIES FROM THE EASTERN HIGHLANDS

The Eastern Highlands of South Africa are here considered to include those parts of Lesotho (Basutoland) and adjacent areas to the south and east, above 6,500 feet, and the Drakensberg Escarpment down to the floors of the valleys between the foothills at about 4,500 feet. From the zoogeographic point of view the Amatola-Katberg range to the south should also be included (Stuckenberg 1962). Although the altitudinal range is great (up to more than 11,000 feet) these highlands tend to be remarkably uniform scenically because of the almost horizontal layering of the constituent geological formations which are exposed in the same order all around the massive central capping of Stormberg Lavas. The Drakensberg Escarpment terminates the highlands abruptly on the eastern side and is an ancient physiographic feature cut by successive, superimposed erosion cycles. Within Lesotho the Orange River drainage to the Atlantic in the west has carved deep valleys in a dendritic pattern. The whole area has summer rainfall; precipitation is highest in the east, especially on uppermost part of the escarpment foothills where it may exceed 70 inches per annum (Killick 1963), decreases steadily to the west, and falls sharply in the valleys behind the escarpment which lie in rain-shadow. In winter the climate is quite severe, with regular frost, frequent strong winds and snow in several months, especially above 8,000 feet. At the highest altitudes the composition of the sunlight has altered sufficiently to produce distinctive growth forms in the flora (Schelpe, 1946).

There is no study devoted to the ecology of the highlands as a whole, but the detailed work of Killick (*op. cit.*) on the plant ecology of one part of the Drakensberg is relevant to much of the area. He recognises three climax communities: *Podocarpus latifolius* forest, which occupies the river valleys through altitudes of 4,200-6,000 feet; *Passerina-Philippia-Widdringtonia* macchia on the summits of the foothills and slopes of the main escarpment face, 6,000-,9,400 feet; and *Erica-Helichrysum* heath on the summit, 9,400-11,000 feet. Forest is absent in the Lesotho valleys, due possibly to the drier conditions and destruction by man. At the present time a major part of the highlands and escarpment is occupied by vast tracts of tussocky *Themeda triandra* grassland whose dominant status in the succession is to a large degree artificially maintained by frequent burning of the veld. Intermixed with this grass is a great variety of angiosperms.

The following species were found in the Eastern Highlands:

Dictyopharidae

Menenches nona Fenn. All material of this species was swept from *Themeda* grassland on the Drakensberg Escarpment over an altitudinal range of 5,500-9,200 feet.

Menenches decuma Fenn. As for *nona* but so far found only near the summit of the Drakensberg Escarpment.

Menenches morta Fenn. Known from the Drakensberg and the Maluti Mountains of Basutoland, from 7,000 to 9,000 feet. Obtained by sweeping *Themeda* tussocks and small macchia bushes.

Menenches imbrex Fenn. Found so far only in central Lesotho, and collected from stunted heath on exposed mountaintops.

Menenches atropos Fenn. Taken from small heath-like plants scattered on exposed mountainsides, from 7,500 to 9,200 feet, in the southern part of the highlands.

Issidae

Griphissus xenocles Fenn. These remarkable, minute homopterans were obtained by sweepnet on a hillside in the Drakensberg foothills thickly covered with *Themeda triandra* grass. The specimens seemed definitely to come from the grass and not from other plants growing in it.

Gamergus phintias Fenn. Collected along with the preceding species but not definitely associated with the *Themeda* grass.

SPECIES TAKEN IN OTHER HABITATS

Cixiidae

Caffrocixius personatus Fenn. This species is an exception among those considered here in that its habitat is climax montane forest dominated by *Podocarpus* species. Both specimens were on young trees.

Issidae

Gamergus stali Metcalf. Swept from a mixture of short grass and weedy plants, a secondary growth on damp soil, below a bank on the side of a road in a steep-sided valley. The area is subtropical and receives good summer rains.

SOME TENTATIVE CONCLUSIONS

It is apparent that a large proportion of the species in which the convergent features earlier referred to are especially well developed, occurs in the Cape macchia vegetation. This is the case especially for the Dictyopharidae and Issidae. As the macchia is an old flora which has been evolving through probably at least the whole of the Tertiary (Levyns, 1962), a long period has been available for these insects to become adapted to the peculiar habitat the vegetation itself offers and to the environment it prefers. Considerable changes of climate and landscape which apparently caused periodic redistribution of the macchia and promoted its evolution (Weimarck, 1941; Van Zinderen Bakker, 1962), must also have favoured diversification of the associated fauna. Fennah (1962: 219) comments on the Subtribes Risiina and Strongylodematina of the dictyopharid Tribe Orgeriini as "very old elements in the South African fauna", and states, "The antenna of *Risius* seems to have only one possible counterpart, that of the Australian *Austrorgerius* Woodward."

In arid areas where the karoo vegetation dominates and the macchia is poorly represented, the fulgoroid species occurring there (such as those of *Capenopsis* and *Bowesdorpia*) have not been collected from succulent plants which are so typical of such areas, but from woody bushes and shrublets of the macchia type. This observation is added evidence that the insects evolved in association with macchia; evidently some were able to adapt to more arid habitats along with those members of the macchia that were able to.

In the Eastern Highlands macchia is not well developed at the present time and taxonomically is little more than a meagre outlier of the main massing on the Cape ranges (Weimarck, *op. cit.*). In these highlands the dictyopharid genus *Menenches* is highly characteristic and seems to be the counterpart of *Risius* in the Cape mountains. Some of the species of *Menenches* have been collected from macchia plants; the remainder have come from *Themeda triandra* grassland, but it is not yet known whether they occur in and feed on the grass itself or live on other plants mixed with it. Probably all the species are associated with macchia plants and evolved when this vegetation was more widespread and successful in these highlands. The frequent, often annual, burning of the veld, to which reference has previously been made, is unfavourable to macchia which is quickly eliminated except from restricted refugia, but favours the grassland (Story, *op. cit.* : 90). This is doubtless the factor responsible for the patchy distribution of *Menenches* species in the Drakensberg where extensive searching may be necessary for location of the small, scattered populations. In prehistoric times, before man started firing the escarpment foothills, macchia probably was dominant over large areas; a demonstration that this was the case could be seen a few years ago in experimental plots in the Giants Castle Game Reserve, which has not been burnt for several years and in which there was a marked increase of woody plants at the expense of the grass. (For discussion and references on this and other aspects of burning, see West, 1965.)

To what extent can the features of these insects be explained by their association with the macchia? As was previously mentioned, the characteristic growth form of that vegetation is an adaptation to fluctuating conditions in which the plants regularly are subjected to periods of abundant water alternating with more lengthy periods of physiological drought. The plants are able to transpire freely in the former circumstances and control transpiration in the latter. It is irresistable to equate the hard ericoid leaves of the macchia with the leathery integument of the fulgoroids and to assume that the latter also is an adaptation to the environmental conditions mentioned above.

The reasons for the brachypterism are less certain, but two are possible. Firstly, the vegetal habitat of macchia is characterised by a profuseness of branches, small leaves and erect stems, and the individual plants often are closely aggregated. Flight within such vegetation is probably difficult, and an ability to fly over the top of it may offer no particular advantage. Instead there may be a premium on the ability to jump which indeed all the species mentioned above do well; it is relevant to note here Guthrie's (1959: 152) conclusion that short-winged Gerridae have a selective advantage over the fully-winged form in larger leg muscles and thus greater skating ability. Secondly, the climatic conditions may promote brachypterism. Brinckhurst (1959: 228), studying alary polymorphism is aquatic Gerroidea, found that polymorphic forms are commoner on mountains and in more rigorous climates, and that cold seems to be an important factor. A germane point is that the fulgoroid species of the Eastern Highlands have been collected as adults from September to March, thus through the entire rainy season, and many of the Cape species occur as adults in the spring months; in both areas these species evidently survive and develop to the adult stage through the cold winter months which are dry in the Eastern Highlands and wet in the southern and south-western Cape. Those species living on isolated bushes in arid karoo country seem to be at a disadvantage in not being able to fly in view of the difficulty in getting from one suitable plant to another; presumably there is restricted gene flow in this habitat, and this may have promoted the evolution of the bizarre *Bowesdorpia* and *Capenopsis* species.

The tendency to a squat, subovate body shape cannot be explained without appropriate studies. It may have its origin in the need to conserve water by reduction of the relative surface area, though it could also favour greater cold hardiness, increased egg production and improved jumping ability. In some cases the shape of the head and tegmina may serve for crypsis; undoubtedly the brownish to yellowish-brown, often mottled colouring is cryptic.

Some of these fulgoroid genera are promising material for the zoogeographer, especially as they are flightless. *Menenches* can be used as an indicator for the range of the temperate component in the insect fauna of the Eastern Highlands, and presents a revealing picture of speciation in those parts. *Risius* has most of its species in the Cape macchia but also occurs in the highveld karoo and on the Zoutpansberg Range in the north of the Republic, on the fringe of tropical Africa, and may prove useful for tracing the dispersal of the palaeogenic element in the invertebrate fauna as well as movements of the macchia.

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